

jr Newsletter

The Announcement of IBM's Pride and Joy!

A Bit of History

For Junior Orphan Foster Parents

EDITOR'S NOTE: This article reminds us of reading through our Baby Book. You know, the one with little Sally's birth certificate and hospital tag pasted on one page? This is the announcement that IBM made early in the fall of 1983, when, after much excited speculation by the press, Big Blue finally gave birth to its beautiful little baby. The announcement overflows with the gushing pride of a new parent. It almost makes you forget that in less than two years the parent became embarrassed by its infant. Anyway, we thought you'd have fun reading this bit of PCjr history, on this, our Fifth Anniversary of jr Newsletter.

The wait finally ended.

After months of being talked about and speculated about, the IBM PCjr finally made its debut in early November. The news went out over wire services, was reported by newspapers around the country, and broadcast on radio and TV.

Here's the scoop.

Beginning this month, IBM's newest and most affordable computer will be demonstrated at more than 1,000



Authorized IBM Personal Computer Dealers and IBM Product Centers in the United States, and it will be offered by IBM's National Accounts and National Marketing Divisions.

Deliveries are scheduled to begin in the first quarter of 1984. IBM said that while it will continue to increase production rates throughout 1984, initial supplies will be limited and may not be sufficient to meet expected demand.

The new computer, designed for home, classroom and office use, comes in two models:

- * A system unit and cordless infrared keyboard that uses cartridge programs and offers 65,536 characters (64KB) of user memory; and

- * A diskette drive model with 131,072 characters (128KB) of memory that uses both cartridge and diskette application programs.

There are also a number of options for the new PCjr, including an internal communications device, a thermal printer, joysticks and more than a dozen new programs.

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PCjr Lives!

By Dick Page

Six Kinds of Files Used with D.O.S.

There are six kinds of files that we have available to use: (1) Batch, (2) Command, (3) Executable, (4) Text, (5) Data, and (6) B.A.S.I.C..

**(1) Batch, [.BAT], (2) Command [.COM],
and (3) Executable [.EXE]:**

The first three are names for specific D.O.S. command programs. They are identified by the fact that they have very specific extensions to their filenames which should not be used by any other type of program. They are: .BAT (for BATch commands), .COM (for COMmand commands), and .EXE (for EXEcutable commands.). From a practical point of view these three types are nearly the same. We can key-in any of their filenames (without having to include the period and the three-letter extension), as the name of a command,

and D.O.S. will find the command and execute it. [Note: They do have important differences which you will want to learn about if you want to make the most of your PCjr.]

(4) Text and (5) Data Files:

Text and Data files are storage files for saving the obvious —> text (from a word processor) and data (from a spread-sheet, game score totals, database, etc.). These can have a variety of extension name variations—many of which are fun to create. The choice is often up to you. However, these files usually do require that you include their extensions as well as filenames when using them. These programs usually cannot be run directly in D.O.S. but must instead be used in conjunction with commercial software programs or with D.O.S. command programs.

(6) B.A.S.I.C. [.BAS] files:

Our diskettes might also hold B.A.S.I.C. programs. First, before we can use any B.A.S.I.C. program, we must have B.A.S.I.C. ready on the computer. This usually means we must have the B.A.S.I.C. cartridge plugged into the PCjr's system unit. (A few programs can run on the simple B.A.S.I.C. built into PCjrs.)

Most B.A.S.I.C. programs have the extension .BAS (short for B.A.S.I.C.). We can ask D.O.S. to run them, but you must type the word BASIC before typing the filename of the program. For example, there's a B.A.S.I.C. program file called SAMPLES.BAS which comes with D.O.S. on the Supplemental Programs diskette. To run the SAMPLES program from D.O.S., you key in the command BASIC, followed by the filename of the B.A.S.I.C. program, like this: BASIC SAMPLES. This two-word command works in two steps; first, it instructs D.O.S. to start running the B.A.S.I.C. language; second it tells B.A.S.I.C. to find and run the program names SAMPLES.BAS. (B.A.S.I.C. has its own set of rules which are good to learn—but that's for another

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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. When I call Microsoft to ask for a copy of MEMORY.SYS to allow the necessary recognition of my extra RAM to run Microsoft programs which require the memory above the first 128k they will not send it. They usually give no reasonable reason. What am I to do?

Various readers...

A. We will not be apologists for Microsoft but our best guess as to the reason MEMORY.SYS is not sent is that it was originally the software supplied with their own hardware; the Microsoft memory expansion side-car! You buys the side-car, you gets the software...

What is difficult for us to understand is this: MEMORY.SYS is just another driver, the same kind of thing supplied ad nauseam with most of their other software, specifically to patch clones or to drive printers (obviously not of their own manufacture) so these clones will run the software! MEMORY.SYS certainly ought to be available to run the software, sometimes Microsoft's own, which requires it. This would be in the same category as any other driver they provide. The side-car ought not be the determining factor, the software should be! Even if you have an IBM side-car, you are in the same logical position as any clone owner who wants to run Microsoft software! After all, we are not asking that a copy be included in all possible products, just the availability for those of us who need it. Surely that can't be asking too much. At least they could make an attempt at distribution by way of bulletin boards if they think the cost of inventory, maintenance and mailing is too burdensome!

What to do, otherwise? Use one of the other memory recognition drivers. Just about any of: Racore, Quadram, IBM, Tecmar, Newcomb, or the Fast-Boot Sector systems of software drivers work as well or better than the Microsoft

driver and some have more advanced features as well.

We recommend Larry Newcomb's jrconfig, which is on jr Newsletter's disks #65 and #99. If you are a beginner, use PCjr Autsetup (#99), which will make boot disks for you automatically and you won't give another thought to your problems with Microsoft.

Q. I have a program called "FLOORPLAN" by Computer Easy. When I try to run it on my PCjr it displays the following message; "BGI Error: Graphics not initialized. (Use Init Graph)" I cannot find a file called Init Graph on any of these disks or on my DOS disks. The program seems to run fine on a PS/2 model 60. Is there any way I can get this to run on my jr?

D. P. Murphy Madison Hts, MI

A. The two-word label (Init Graph) should generally be a tip-off that this is not a disk file... This looks like it was written in one of Borland's Turbo languages (the B.G.I. error business is usually a language library graphics "include" and call) so it makes us think there is a menu or setup or install procedure which uses Init Graph as a driver for one of the screen choices before you can run this program. The default (or previous set-up) may be for either EGA or VGA and the Init Graph will set up the B.G.I. (Borland Graphics Interface..? It's been a while...) for CGA which is what your jr must have. This could all be an internal part of FLOORPLAN, but there may be a series of files on the disks from which the graphics driver gets its parameters. Depends on how the programmer chose to do it. Borland's products support the jr very well and other companies could take note.

If you have not yet acquired Vernon Bueg's LIST.COM from the Software Store, then by all means get a copy (It's on all the Best of jr Newsletter disks). With it you can peek into this or other programs without fear of changing anything. You should try to find the ASCII of the above mentioned menu. Here's where you'd probably find a selection of screen choices as well. At least you'd know that it really is a part of the program, and would then assume that you have to run whatever set-up is required.

Here's another stab at the problem: If the program runs on any other machine, you might try re-setting the screen parameters for CGA while it is installing or running on that machine, save the changes to a copy of the program on a separate diskette and take that modified version back to the jr to use.

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Questions and Answers

(Continued from page 3)

Q. My system has 640k with a PC Enterprises second drive and Cartridge plus Thin Font. Since adding the drive and memory I cannot get my good old Dollars and Sense to work at all. I called Monogram about this problem and they only said it won't work on a jr with expanded memory. Is it possible to get this going again? L. N. Also; Why won't Program XXX, or Game XXX work since I expanded my memory. I thought it would make it run even better...

G. Milton Milwaukee WI and others

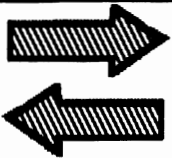
A. Some of the early programs written for the Tandy, the original PC and the jr. absolutely insisted on ONLY 128k (sometimes less - 64k!) of RAM. The addressing method used by the programmers would not allow access to any memory above the first 128k. Actually it's a little more complicated than that but what it all means is this:

You must have a boot disk which will configure your machine to NOT recognize the extra memory and in some cases, to NOT recognize ANY added disk drives. A bare-bones booter is what it's all about.

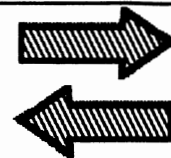
A prime example of a program which worked wonders under these conditions was the original Copy II, PCjr version. It simply refused to run, told you on-screen why, and recommended re-booting with no added drives and no additional memory above 128k. The simplest way to do this is to start up your PCjr a plain DOS disk, with no config.sys file. It ran and did its magic wonderfully that way.

Remember, there is an easy way to experiment with various booting disks. Get diskette #99, PCJR AUTOSETUP, from the Software Store. This allows selection from a menu for the kind of boot you require and will write both the AUTOEXEC.BAT and the CONFIG.SYS files for you! You'll be customizing your jr for the best performance, matched to your own hardware and software applications preferences. By reading and studying the two files this disk writes, you'll learn quite a bit about the how and why of configuring.

Please don't be misled into thinking that these are problems unique to the PCjr. Of the programmers we know, all have a minimum of two booting configurations, even with their '286 or '386 machines running Windows! Sometimes they just want DOS and the requirements for the memory usage is SO different than Windows uses that there is just NO way to efficiently have only one booting configuration. Some programmers even have a third booting configuration if they also run OS/2! The knowledge you gain today by experimenting with your jr will surely be of value in the future.



Reader Feedback



Reader Offers 300 Unprotect Files

In the past year I have had inquiries about the unprotect files. Some people wanted to have an unprotect file for PFS Write, which is essentially the same as Writing Assistant. At the time, I did not have such a file, but have since found one. So, if you mention this in the newsletter, you will possibly make a lot of people happy. Since only one disk is involved, the usual price of \$4 still applies. This includes the disk and the mailing costs.

Of course the progress of collecting unprotect files has continued. I am now offering one disk with 300 archived unprotect files! This offer replaces the two-disk offer noted last year. So the price is back to \$4 for this one disk. Naturally Writing Assistant unprotect is included. The instructions on how to unarchive these files will be included in the forwarding letter.

*Clyde A. Dodge, 1075-285 Space Park Way
Mountain View, CA 94043*

New Junior User Has Tips & Questions

I recently received my first issue of your fine magazine and, as a new Junior owner, I would like to comment on a couple of things and ask some questions. My jr has the jr Hotshot with 512K using 100ns chips and a NEC 10Mhz V20 giving me a 640k and a Norton SI of 1.9 compared to an IBM Ps/2 SI of 2.0. I also did the do-it-yourself two-drive controller mod and usually boot DOS 3.3 using jrconfig.dsk -D2 -T3 -S128 -M. One reader states that the 2 disk version of *Where In the USA Is Carmen San Diego* will not work on his Jr; Mine works just fine with either DOS 2.1 or 3.3./ Another reader states that he has DOS 3.,2 but uses device drivers to format his disks. I don't have a 3.5 drive at home but on the Ps/2 at work DOS 3.2 and 3.3 will allow you to format 3.5 and recognize it. Are those drivers necessary to use a 3.5 on the Jr? Also no DOS machine will allow you to diskcopy between different type drives but file copying is always possible. If you have hidden files you need to transfer it can be done using a sector editor.

I run IBM BASICA simply by renaming it to abasic. Yes, the cartridge must be in, but the disk basic loads and appears to run normally. Anything wrong with this method? Another reader mentions INT 9 difficulties. I run Quick Basic V4.0 and DBase III with no problems and the 128k RAM disk allows me to compile my programs very quickly on the C drive. Do you

have a current address for Larry Newcomb author of jrconfig.dsk so I can send thanks and fairware contributions? Where can I get the pinouts for the serial port without shelling out \$40 for a tec. manual. Thanks for printing the video pinouts this month. What's the cheapest way to add a hard drive, and is there a do-it-yourself kit for that or a 4-drive modification to the controller card.

My thanks also to Paul Rau for answering my dozens of questions and low prices.

Dan O'Quinn, Walterboro, SC

EDITOR'S NOTE: Larry Newcomb's address in the jrconfig.doc is the only one we have for him. We'll print the pinouts for the serial port. No, we don't know of a do-it-yourself kit for a junior hard drive or a 4 drive mod. If we find either, we'll add it to Jr Toolkit, Disk #110.

Comments on Demise of CompuServe PCjr Forum

It was very disappointing that the PCjr forum on CompuServe was ended and incorporated into the IBM Hardware forum. It seems like people hardly ever use it anymore. Most of what I originally learned about the PCjr, and my enthusiasm about modifying it, was a result of the many talented people who were members of this forum. Even though computer hardware technology continues to rapidly

(Continues on page 6)



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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)

➤ **PCJR MUSIC SAMPLER.** A collection of classical music "concerts" performed with great precision to produce the highest quality sound you've ever heard on your PCjr. Disk includes a separate program to activate Junior's sound generator before running game software to get highest quality sound. 128K ok (Disk #119)

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. Requires Basic Cartridge. (Disk #39)

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)

➤ **PCJR MUSIC SAMPLER.** A collection of classical music "concerts" performed with great precision to produce the highest quality sound you've ever heard on your PCjr. Disk includes a separate program to activate Junior's sound generator before running game software to get highest quality sound. 128K ok (Disk #119)

➤ **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)

PRINTMASTER LIBRARY. Two disk set full of graphic images for use with PrintMaster. (Disk Set #3 - 2 disks, \$10)

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

EDNA'S COOKBOOK. Will organize your recipes by subject, allowing for quick retrieval. Print out sorted collection for your own cookbook. 128K, 2 drives. (Disk #96)

change, the adaptability of the PCjr never ceases to amaze me. The various modifications that I have performed on my PCjr has been an invaluable learning experience, and has taken, a lot of the mystery out of computer hardware for me. I want to commend you for the outstanding job that you do with the jrNewsletter. Your newsletter is one of the last remaining comprehensive sources of information for us few, but loyal, avid PCjr users.

Dr. Louis M. Fusco, Loring AFB, ME

Reader Comments On "Common Sense" Approach

'My niece has used my "jr" for a few years now, but I have insisted on having the jr Newsletter sent to me so I could read it first. I am completely without technical skills and a lot of the articles have been a great help because they appear to be written by and form normal people and not corporate technical employees and I have been able to use a lot of the tips when working with my own system.

It would be very nice if there was such common sense help available to people who have upgraded to other hardware. If there is such a source of help I certainly have not found it. Computer magazines now give very little help to "non-techies" as they did when most of them started.

Thanks again for all the help you have been in the past several years.

R. V. Gregory, Rutland VT

EDITOR'S NOTE: We try hard to provide useful information in a way that can be easily understood. This is not easy, but we will continue to do it for PCjr users. We don't know of any mass market magazines that offer much of this for non-techies either. Maybe we should start one.

He Really Misses His PCjr!

It is with regrets that I inform you that about a year ago a heavy power surge wiped out my extra tecmar memory, reducing my memory to the original 128K. Actually it was the voltage regulator that fried. This was just the excuse to upgrade to a px/px clone with a hard drive.

The jr found a home back in Wisconsin with one of our sons. I sent all of my back issues of the Newsletter with it. Understand that he subscribed shortly thereafter. Around the end of the year, he reported that the monitor had stopped working. The last I heard he hadn't gotten it repaired yet.

Boy, do I miss some of those nice features of the jr. The CGA monitor on my clone is the pits, and as for sound, can

hardly hear the speaker in this PB8810. Bought a "Creative Music System" board and software package that sounds great with external phones or speaker. Miss the Programming ease of the "PCjr Music Machine."

Those that have continued to maintain and use the jr are to be both envied and admired. Actually, the XT was hardly an answer to my prayers. Now 640K and 32meg drive isn't enough to hardly me memory and storage needs. The minimum system now seems to be 4meg ROM, 80meg hd, and vga with 1 meg of memory. Then you should have both 5 1/4 and 3 1/2 hd drives.

Your's is the best Newsletter that I ever had a chance to read. Really have missed the great tips from all those great Guys & Gals who love their jr's.

Robert F. St. John, Las Cruces, NM

Money Counts V6.5 Works on 640K Junior

I just got my April issue today and noticed in the Reader Feedback section the problem mentioned by Keith E. Justice regarding running Parsons Technology's Money Counts (latest version). I don't know what his "latest version" is/was. I have successfully installed Money Counts V6.5 on my PCjr w/640K and two disk drives. The trick to getting it to work is:

1. Use DOS 3.21
2. Have PCJREXTRA in your config.sys as a device driver.

PCJREXTRA is a device driver to make Junior more compatible with standard PC software, and it is available from Owl Software and jr Newsletter (PCjr PowerPack II, Disk #65).

Stephen Koscielny, Gaithersburg, MD

Tips On Selecting PCjr Compatible Software

Have faith in the Peanut. It is still the most fun home computer that is DOS compatible.

If people wrote software that stayed within the operating system, jr wouldn't have a problem. More, not less, people are doing this. If people wrote software within the operating system, OS/2 2.0 would have hit the streets by now. Short cuts to hardware are no longer cute and clever. They hinder hardware variations of which jr was just an early example.

Look for software described as "Character based graphics." This has nothing to do with whether the program does graphics. Look for software described as not having problems running in the OS/2 DOS Box. The DOS Box is DOS compatible, but doesn't like hardware shortcuts.

Joseph F. McLean, Worcester MA
(More Reader Feedback on page 17)



FAMILY TREE. Powerful genealogy program with easy to use menu system. Prints handy research forms, checks your accuracy, prints variety of charts and can make your family tree into a book! 256K (Reviewed 3/90) (Disk #109)

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

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 screenwriting 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. Cartridge BASIC required (Disk #58)

RESUME SHOP. Makes preparing a professional looking resume easy. Guides you through all the steps of the process with a series of menus and suggestions. One page limit. 256K (Reviewed 12/90) (Disk #121)

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

SAVE THE PLANET! If you want to do your part to stop destruction of the earth's environment, this disk can help you. Let your PCjr explore this extensive database of information on the major environmental issues as well as what you can do to help. Charts, graphs, background facts, games and demonstrations all related to saving the only planet we have. Need 512K. (Reviewed 1/91) (Disk #120)

WILLS. Written by a lawyer, this software helps prepare wills that are appropriate for many different situations. Includes 18 basic types, with many clauses that can be combined to create "customized" wills for most families. 256K (Disk #124).

Print Utilities

IMAGEPRINT V3.33. 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)

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How Junior's Keyboard Works

By John E. Wilson

Some computer operations which seem very simple and elementary are actually very complicated. For instance; when you press the "B" key while holding down the shift key, a capital "B" appears on the screen. This occurs so quickly and naturally that we tend to think of the computer as an electronic version of the old manual typewriter. Just as they had levers connected to the keys which caused type to strike the paper through a carbon ribbon it seems reasonable to conclude that the computer must have an electronic lever connected from the keys to the screen. This is not the case, though, and your computer must do a lot of work, requiring many steps and involving many different parts of the computer, to get that "B" from the keyboard to the screen.

In this article we'll look at just how your PCjr finds out that you want to input a capital B. You'll learn that your PCjr's keyboard system, in addition to being hardworking, is extremely flexible. IBM had this flexibility in mind when they designed Junior, and the very first keyboard (the infamous chicklet keyboard) didn't even have the keys marked. It came with overlays so that the keys could mean different things in different programs.

In this article, when we refer the PCjr keyboard, we mean the original 62-key IBM keyboard. There are some third-party keyboards available for Junior that look just like the standard 83-key PC keyboard, or the AT style keyboard or even the latest 101-key PS/2 style keyboard. There are several good reasons to buy and use one these third-party keyboards, but a Jr Newsletter survey conducted last summer showed that about 80% of Junior owners still use their original IBM PCjr keyboard.

The PC Differences

The PCjr keyboard differs from the standard PC keyboard in several very significant ways. Because of the potential problem of software incompatibility from these differences, your PCjr does a lot of extra work every time you press a key. But Junior does this so efficiently that, for the most part, you never notice it.

The most obvious difference in the keyboards is that the standard IBM PC keyboard has 83 keys while the PCjr keyboard has only 62 keys. Missing from Junior's keyboard is the numeric keypad, the specialized cursor keys, the ten function keys, and keys for some seldom used functions and characters (such as scroll lock and the tide character). A less obvious difference, but one that makes life much harder for Junior, is that the PC keyboard has a buffer, a memory storage area, that can store up to 20 keyboard actions in case the main computer is busy and is not ready to receive keyboard data. The PCjr doesn't have this "on keyboard" buffer, and we'll cover the consequences of this shortly.

A third way in which Junior's keyboard is different, is that key repeat action (IBM calls it "typematic".) on the PC

keyboard is handled by the microprocessor in the keyboard while Junior handles it with the main computer microprocessor, the 8088. Junior's keyboard does have a microprocessor but is isn't as powerful as the one in the PC keyboard. As you will see, Junior's method for key repeat is more versatile, and in some ways better, than the PC's method.

Each Key Has a Code Number

The keys on a computer's keyboard are actually nothing more than switches. Whenever a key (or switch) is pressed, it sends a signal to the computer; and whenever the key is released it sends another signal to the computer. As you would expect, each key has a number. These key numbers are called "scan codes" because the small microprocessor in the keyboard constantly scans the keys for action, and sends the scan code to computer whenever a key is pressed or released. The "B" key, for example, has a scan code of 48 when it is depressed, and a scan code of 176 when it is released. The release scan code is always the depressed scan code plus 128.

When a PCjr battery powered cordless keyboard is used the keyboard microprocessor also puts the keyboard into a power-down mode during periods of no key activity. The infra-red light connection between the keyboard and the computer is just about as efficient in passing information from the keyboard to the computer as a cable, but interference problems caused this type of connection to end with the PCjr.

Interestingly, whether the keyboard is linked to the computer with infra-red light or a cord, all of the data from the keyboard is sent to the computer serially. The scan codes are each one byte long (which is eight bits) and each scan code is sent one bit at a time to the computer. Actually each scan code starts out to be eleven bits long, because there are some other signals included with it. Furthermore, the computer only accepts keyboard data half of the time so that it can do other work. You would think that Junior's keyboard would have trouble keeping up with our fast fingers, but it doesn't.

Why Junior Beeps

Because of the importance of keyboard activity this keyboard data is sent to the main computer with interrupt number 2, a non-maskable interrupt (NMI). Interrupts, you will probably recall, are computer support programs built into read-only-memory (ROM). A NMI takes precedence over almost all other computer activity (which is why it is called "non-maskable") and it can be turned off only by a special timer. In Junior this special timer is connected to the disk drive to insure that the disk drive and the keyboard don't both attempt to send data to the 8088 at the same time. This is why your PCjr beeps and refuses to accept keystrokes when the disk drive is operating.

The pulses which make up the 11 bit scan codes are received by the main computer by way of bit 6 of port number 98 (62 hex) in the 8255 Programmable Peripheral Interface chip. This is a general purpose input/output chip that was described in detail in the recent articles about sound genera-

tion on the PCjr. Interrupt number 2 converts the 11 bit scan codes into standard eight bit PCjr scan codes, and now the computer knows which key was touched, and whether the key was pressed or released.

Next, your PCjr converts these PCjr 62-key scan codes into standard PC 83-key scan codes. Interrupt number 48 does this conversion and the converted scan code is stored in port number 96 (60 hex), which is also in the 8255 chip.

So far, just about everything that we have talked about occurs only on the PCjr. In the PC, the scan codes are sent directly from the keyboard to port 96. Junior goes to a lot of extra effort so that programs will see no difference between the PCjr keyboard and the standard PC keyboard. At this point both Junior and the PC use interrupt number 9 to interpret the scan codes.

Interrupt 9 is the routine that concludes you want, for example, a capital "B" rather than a lower case "b". When you think about this you will see that even this simple example requires several decisions by the computer. A capital letter can be made either by holding down a shift key and pressing the letter key or by having the caps-lock key toggled on, but if the caps-lock key is on and the shift key is down then the letter should be lower case. The computer has to keep track of several keys at a time and know what to do when combinations of keystrokes occur.

After the computer decides what the character should be, it places the ASCII code number of the character into a memory buffer for use by the software. Special code numbers are assigned to the non-character keys, like the function keys and the cursor keys, and also to certain combinations of the Ctrl and Alt keys with other keys. These special code numbers are also placed in the keystroke memory buffer for use by a program in almost any way it chooses.


Not all combinations of keys are recognized by Interrupt 9. A combination of the Alt key and the tab key, for example, is ignored. Some combinations of keys, Ctrl-Alt-Delete is probably the best example, require special action by the computer, so when interrupt 9 detects these key combinations it goes off into other routines within ROM. Junior has special actions (Shown in Table 1) for a few key combinations that the PC doesn't have.

As a result of all of these decisions to make, interrupt 9 is long and complicated in both Junior and the PC, and makes the computer go through a flurry of activity whenever a key is pressed. Programs which reassign the meaning of keys often bypass interrupt 9 and give their own meaning to the scan codes, although there are other ways to accomplish the same thing.

Built-in Flexibility

Junior's keyboard is, in several ways, more flexible than the standard PC keyboard even though the PC keyboard contains more sophisticated, and expensive, hardware than the PCjr keyboard. The key repeat, or typematic, action in the

(Continued on page 10)

 Disk	Software Store Print Utilities <i>Please Use Order Form on pg. 23</i>	 4 PCjr
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PRINT HANDLER. Excellent printer setting utility allows you to set features from a menu. Other software on disk for banners, sideways printing, custom font generator (Epson), print spooler, count pages before printing and more! Will work with most dot matrix printers. (Disk #51)

PRINT IT! Selection of programs allows you to print large banners as well as tiny (but quite readable) documents on most dot matrix printers. Compress four pages on one sheet with Docsmash, print on both sides of computer paper with Both, reformat into tiny columns with Microtext (many other options), make wall-length banners with Bannerific! 256K (Disk #111)

Spreadsheets

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)

AS-EASY-AS V.4.00 This is a MAJOR upgrade of the popular, powerful Lotus 1-2-3 look-alike spreadsheet software. Many useful features have been added to an already full-featured program. Earlier 256K version (2.05) is Disk #67. This upgrade requires 384K. Reviewed 2/90 (Disk #107)

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)

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)

PC CALC PLUS. V2.0 More advanced than PC Calc (Disks 5 and 6), this is a very powerful spreadsheet program which includes graphing features. Excellent. 512K (Disk Set #2 (2 disks) \$10.)

Utilities

4DOS V2.21. This is the "ultimate utility" since it replaces almost all DOS commands with new, improved versions. And it adds 35 more useful commands of its own! It will replace many of your favorite enhancement utilities. For example, 4DOS allows 40 character file descriptions, more flexible wildcards, multiple commands per line, handy conditional commands, command stacking, alias commands, faster batch processing — and MUCH more! A must for all serious computerists. Reviewed 1/90 (Disk #102)

(Continued on page 11)

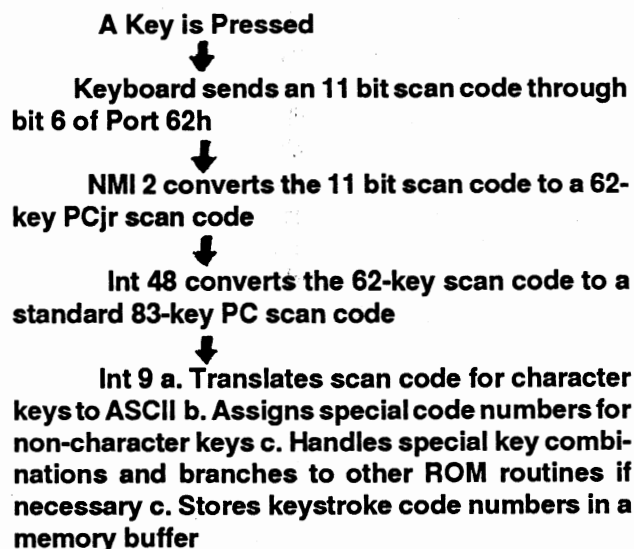
How Junior's Keyboard Works

(Continued from page 9)

PCjr can be slowed down and even stopped by special service routines built into Junior's ROM. Service 3 of interrupt 22 (16 hex) can increase the initial delay between when a key is held down and the repeat begins, and it can slow down the rate at which the repeat occurs, and it can even turn off key repeat altogether. The service does not, however, provide a means to speed up the key repeat rate. This key repeat service first appeared on the PCjr and is not available on the PC or XT. Beginning with the AT computer, IBM expanded the service so that you can set key repeat to about any rate desired.

There is much more to the interaction between the keyboard and the computer and the software that we have covered, but you can even now better appreciate how much effort you PCjr goes to in order to provide both flexibility and compatibility. Junior's keyboard steps which we have covered are summarized in Figure 1, and remember, every time you press a key, Junior goes through these steps.

Figure 1 FLOW OF KEYBOARD DATA IN PCjr



SPECIAL PCJR KEY COMBINATIONS

<u>Function</u>	<u>Key combination</u>	<u>Description</u>
Keyboard Click	Alt-Ctrl-CapsLock	Speaker makes clicking noise when keys are pressed
Run Diagnostics	Alt-Ctrl-Ins	Starts ROM based diagnostics program.
Keyboard Adventure	When Esc key is the 1st key pressed after Cassette BASIC comes up.	Starts ROM based Keyboard Adventure Game, complete with a character named P.C. Won't work if BASIC cartridge is in.
All 256 extended ASCII codes	Hold Alt, Press Fn, then N; then hold Alt and type in number	Display ASCII characters above 127. For example the degree symbol (°) is ASCII code number 248.
Function Key Lock	Fn, then Shift, then Esc	Locks the number keys as Function keys (F1-F10), and cursor keys and Q, B, etc, to their function states.
Screen Centering	Ctrl-Alt-left arrow	Shifts screen one space to the left.
Screen Centering	Ctrl-Alt-right arrow	Shifts screen one space to the right. Both the left and right shifts can be repeated.

A Program to Compile Batch Files

PowerBatch is a compiler for batch file "type" commands. The program accepts all batchfile commands, plus 35 other PowerBatch commands which increase the power and versatility of the files you create.

A compiled PowerBatch file offers several advantages over a traditional batch file, including:

- * the file executes faster than its batch file counterpart,
- * it avoids many of the limitations of batch file programming, giving the file more power and flexibility than is possible with a traditional batch file, and
- * the file cannot be changed without machine code modifications, making your files safe from those who would read and attempt to change your files.

PowerBatch programming is quick and relatively simple. If you are proficient at making batch files, you're already a qualified user. To write a PowerBatch file, just write a simple batch file, and save it as FILENAME.PWR.

To compile it, you simply type the command:

POWERMAK FILENAME.PWR FILENAME.EXE

The compiler does the work for you. If you have an error in the input file, the program will end, notifying you of the error in a file called POWERBAT.ERR.

Demo1, included with the program, has 222 batch file statements in the .PWR file. That includes 129 variables and 199 commands. The file takes up 9,268 bytes of disk space. After compilation, the .EXE file takes up 34,698 bytes of disk space. As a trade-off for the extra disk space, you get good speed of operation. In the case of this particular file, it would not run as a standard batch file, because it includes many of the PowerBat enhanced commands.

As a general rule of thumb, if you create a compiled .EXE file from a standard batch file, the file size is about tripled. However, the speed of execution may increase anywhere from 50% to more than triple, depending on the types of commands in your batch file and your particular system configuration. Because the compiled version of the batch file contains nearly all the command information the computer needs to execute it, the system isn't slowed down looking for it. Therefore, the slower operating systems benefit most from compiled batch files. The speed increase will vary depending on your system's speed and the speed of disk access, as well as what types of commands are included in any particular batch file.

Checking it out on a case-by-case basis is certainly worth the effort, especially when you start using for batch files you already use. The programming has already been done, and compilation takes only a few minutes. And, if it speeds up your machine, you'll certainly enjoy the additional power of 35

(Continued on page 17)



ASIC. Excellent BASIC compiler turns your BASIC programs into executable COM or EXE files. A shareware alternative to costly compilers. 128K (Reviewed 12/90) (Disk #122)

AUTOMENU V4.7 Make your own menu system to greet you every time you start up your trusty Junior (or PC,XT,AT,PS/2). This is perhaps the easiest menu system to set up, and yet it has advanced features if you want them. Uses only 32k. (Disk #123)

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)

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

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)

LZEXE. Cut down dramatically on the disk space required for software. LZEXE compresses EXE files into 2/3 to 1/2 their original size and allows them to be run from compressed form. Great for keeping RAM disks small and memory free. Utility will also convert COM files. 256K (Reviewed 5/90) (Disk #112)

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

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)

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-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)

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A DeskJet Love Story

By Vincent Vitale

The cover story on a computer publication stated deftly, "...Your Next Printer Will Be A Laser." My gut reaction at the time was,—and my reaction still is,—"Sorry, I'd rather stay with my ink jet printer." I have an HP DeskJet Plus, and I'm devoted to its brilliant technology.

There is no doubt that the laser printer is the glamour child of hard copy. Its combination of high-speed printing and reproduction quality have made it the desired printer choice for businesses. But not every computer user is a big business. The needs of big business are different from the needs of the average home user or small business. The differences are kept from being distinct by the fact that most computer publications still cater to the corporate buyers. It is easy to understand how "the rest of us" could be seduced into thinking that we simply can't live without a 486 or a laser at our sides. The development of the more modern ink jet printers has called into question whether we really need laser printers, at least at the lower labor-intensive levels.

Inkjet technology is not new, but the pioneering versions of earlier years had ink leakage problems. That's not the case at all with the new generation of inexpensive models.

There are many reasons why I often recommend that someone buy an inkjet printer rather than a laser. I have been working with a Hewlett-Packard DeskJet Plus for the last year, and that is my main point of reference, although I also use a Kodak Diconix 150 Plus for travel. Most of what I'm going to say also applies to Canon's Bubble Jet printer and any of the others which place ink instead of toner, onto paper. I would like to share with you here some of my personal reasons for favoring the ink jet printer.

Print Quality

The quality of the hard copy from an ink jet printer is almost indistinguishable from that of a laser printer. When I'm choosing a printer, the quality of the hard copy which results from it is still the most important single factor in my decision. I've seen various articles written comparing their resolutions, and even though there is a minute difference visible in the comparison test, just keep in mind that what one sees in those reports are magnified characters and images. In practical reality, most people cannot, or do not care to, perceive a difference between the results from the ink jet printer and the laser printer.

Unlike the laser, however, the results from the ink jet may be somewhat dependent upon the paper used. Bond generally yields excellent results; cheap photocopy paper yields less-than-excellent results. (This is due mostly to the tendency of the cheap photocopy paper to spread the ink.) Like any other printer purchase, however, one simply goes through a period of adjustment experimenting with the new product.

The sheer popularity of these new technologies has fostered new paper technologies as well. For example, First Choice paper from Weyerhaeuser Paper Company yields excellent results from either laser or inkjet technology, at a lower price-point than bond.

The quality of the DeskJet printer is so good that Hewlett-Packard's marketing department specifically chose to market it as a high-quality alternative to the 24-pin printers on the market, and not as an alternative to the laser. Hewlett-Packard no doubt saw it as much less personally threatening to target the pin printer market than to compare their DeskJet with their bread-and-butter line of lasers.

Sound Level

When turned on, but not printing, the DeskJet printer is completely silent, unlike the laser printer.

My DeskJet sits on my desk (as the name implies) only about two feet from me, as I work on my computer (which is also completely silent). I have always appreciated a quiet working environment. The usual situation is that I am sitting at my desk and composing text, rather infrequently requiring a printout. When I do want to print, however, I don't want to have to go through a ritual of turn-on and warm-up cycle, as I would with a laser printer. Furthermore, if one chooses to download fonts, one doesn't have the option of turning the laser printer off and on, since the cumbersome downloading process would make it impractical. Tethering myself to a labor means coping with the constant whirl of the internal fan, barely perceptible in an office atmosphere, but somewhat annoying in a quiet room at night.

Reliability

It is probably not necessary to have a service contract for a DeskJet, while it is almost absolutely necessary with the laser printer, especially after the first year.

This deduction has to do with a number of factors, some of which I have mentioned elsewhere. For one thing, the ink jet printer has far fewer moving parts than the laser printer. Look on the inside of one and you will find a rail, along which a carrier moves a combination printhead/ink reservoir along the page, spraying out characters and/or images. With the exception of the paper feed mechanism, little else moves on the ink jet printer. Compare that with the complex laser printers, with its myriad drums, rollers, corona wires, toners, etc., and you will see what I mean.

Additionally, and more important, the laser printer has much more power flowing through its components, usually upwards of 1000 watts. Even when its on but not printing, it is still using about 500 watts! Over time, all that power will tend to degrade the components. Then there's the DeskJet which uses a whopping 25 watts when its printing and only 8

watts when it is on but idle. Most light bulbs use more than that! It is highly unlikely that there will be a degradation there. This view is supported by the fact that Hewlett-Packard recently extended the warranties on their DeskJet products from one to three years. Companies usually do that only when they are fairly certain that the machine is not going to break down.

Cleanliness

The DeskJet is cleaner than a laser. Ask anyone who has worked with toners how much they liked it. Toner is a fine dust which tends to spread around when not totally contained. For the most part, small office lasers today operate with a replaceable drum which carries the toner, so the user need never see it. But the printer itself will collect toner on its internal parts over time and will require cleaning. The more likely scenario is that the system is just used and used until the collected toner causes a problem somewhere internally and requires service. This is why many maintenance personnel know that a user can avoid a maintenance contract for the first year, but probably not after that. It takes about that long for the toner to collect to the point that it could cause a problem. (Are you starting to see a pattern of how many of these considerations are interrelated?)

Safety

The ink jet printers may be safer than their laser printer counterparts.

This is no doubt a controversial subject. I initially became suspicious of this issue when I first received the brochure about the new Hewlett-Packard LaserJet III, which mentions an ozone filter, while my literature about the LaserJet II had no such mention. To find out more, I called Don Johnson (no, not that one) at Hewlett-Packard. He is their Product Regulation Team Leader for laser printers. He informed that regulations require that there be no more than .1 ppm (part per million) of ozone emitted into the air from the laser printer. The LaserJet III had .055 ppm, and according to Mr. Johnson, and the LaserJet HP has only .003 ppm due to some newer technology developed after the larger LaserJet. The LaserJet IIP doesn't have an ozone filter.) Ozone inhalation may cause some pulmonary problems of hay fever symptoms, but I was reassured that that is extremely rare in their lasers.

As far as the issue of radiation is concerned, their laser products are Three B Class 1 products, meaning that the laser beam is concealed and the user cannot be exposed to it. All this sounded perfectly safe, but for two things I know from my experience: (a) the exhaust air from laser printers carries a strange odor, and it is unpleasant to be too near it for a period of time. This may not be too offensive in a well-ventilated office, but back at the ranch the situation may lead to some seriously stagnant air. Also, (b) regulations, including government regulations, tend to be written by industrial members working for the companies intended to be regulated. The result is often regulations which do not accurately reflect realistic levels of concern.

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PKZIP V.1.02. The new and increasingly popular file compression utility used by more and more BBSs. Includes PKUNZIP, the one you need to uncompress downloaded ZIP files, and many other features. 128K ok Reviewed 2/90 (Disk #104)

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

SCOUT. Excellent memory resident (or not) file manager, DOS shell. Move, copy, rename, volume label, search, sort, printer control, view files, and more - fast and easy. Best we've seen. (Disk #81)

SPEECH. Make your Junior talk! With this software you can make your PCjr's internal speaker say anything you want. Very easy to use. No additional hardware required. (Reviewed 7/90) 128K ok. (Disk #114)

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)

TEXT UTILITIES. Includes V7.0 of List.com, the powerful text viewing software, which adds many handy new features in this version. Also on disk: A versatile directory listing and disk labeler; the fastest text searcher we've seen; a handy copying utility with many features; a memory resident protection against overwriting precious files. 256K Reviewed 2/90 (Disk #103)

TYPEWRITER. When you'd rather use a typewriter instead of a word processor, this is the one to use. Couldn't be simpler. Margins, tabs, type size all can be set. Disk includes two printer control programs for higher quality output. 128K ok (Disk #93)

Writing Essentials

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

PC-OUTLINE. Organizes thoughts, notes, lists of just about anything. Powerful features create logical outlines, merge with your word processor, customizing allows you to rearrange and manipulate data. Outperforms many commercial programs, says PC Magazine. 128k. (Disk #17)

(Continued on page 20)

A DeskJet Love Story

(Continued from page 13)

So much for lasers. What about the ink jet printers? There is no ozone. There is no radiation. There is little other than ink being sprayed or otherwise applied to paper. That is the beauty of it. One may entertain thoughts of concern about the health hazards which may be around a laser, but the ink jet is beyond reproach.

Speed

OK, you've got me there. There is no denying that the laser is much faster than the best ink jet printers for the consumer market. The typical laser pounds out eight pages per minute as opposed to the ink jet's four, and that's if you're comparing double-spaced documents in standard Courier typeface. Go to single spacing with Times Roman 14 point typeface, and the ink jet printer is crawling compared with the laser printer. But who needs all this speed in the home? Yes, who needs it? At a busy office, where the documents keep flying, it is no doubt necessary to have greater speed in production. My experience, and that of many other people I know, is that the average home document is one to two pages. For the occasional 50-pager, you press "Print" and go for a cup of coffee! (Chances are they would do that at the office, too) Why all this concern about speed for home printers? Relax, we're all printing faster—with whatever printer device—than anyone dreamed possible twenty years ago.

Operating Cost

Supplies for the ink jet printer cost at least the same and potentially less than for the laser printer.

I say potentially because there are many factors involved in the determination of the cost. Most office laser supplies seem to be priced at an approximate \$.03 to \$.04 per page printing cost. Hewlett-Packard's DeskJet printhead and ink cartridge is also priced in that range. However, recharges are available for both laser and ink jet cartridges, and the output must be determined by individual experience. Cost per page is an area where the Canon Bubble Jet technology diverges (in practical terms) from DeskJet technology. Canon prices the Bubble Jet cartridges according to a \$.10 to \$.11 per page yield. This is a significant departure for the yield/price ratio for the DeskJet and should not be ignored in considering a purchase.

Just another word about Bubble Jet technology. Canon (the inventor) goes to great lengths to convince the public that bubble jets are not ink jet printers, and that their technology is completely different. That certainly may be significant on the level of legal patents and marketing strategies. However, is the user terribly concerned with whether the ink is sprayed or burst onto the page? I doubt it. In practical terms, both have a replaceable printhead/ink cartridge which rides back and forth over the paper to deliver the ink to the paper. Until

recently, only the ink used with the Bubble Jet printer was water resistant. Now HP is delivering its standard DeskJet printhead/inkhead cartridges with water resistant ink, too. For most purposes, both of these technologies should be considered kindred and equally desirable.

Ink Smearing

Until Recently, this was one of the faults held up as the great dissuader from ink jets. However, recently Canon introduced its Bubble Jet technology, with water resistant ink, and HP has improved its formula so that their new ink is water resistant. What does "water-resistant" mean? My understanding of it is that after one day of drying out, the ink sets and is not susceptible to smearing. This is good news.

In defense of the ink jet art, I would say to worshippers of toner that it is not without its faults once on the paper. Have you ever had a bad case of "toner sticking?" I have. For the uninitiated, "Toner sticking" is what happens when a laser-printed page is placed up against a plastic surface for a while, specially in a warm atmosphere. The toner begins to stick to the plastic, and when you pull the two surfaces apart, you will have some of the toner on the plastic and some on the paper. This happens with plastic binders very frequently. It will never happen with an ink jet-printed page.

Price

The ink jet printers tend to be one-third to one-fifth the cost of a laser printer. The variation will depend on whether you have a desk unit or one of the ink jet portables, which clearly dominate the portable printer market. Lasers are impractical as portables because of the size of the drum. Enough said.

You can Print In Color with the DeskJet

Due to the popularity (with good reason) of the DeskJet and similar technologies, there are several outlets which offer refilling systems for the HP cartridge. For the moment, put aside the fact that it save the user some money. Also put aside the fact that HP may start selling refill kits itself as part of its new environmental recycling program which now only exists for the LaserJet. (This is a desirable projection [wishful thinking] on my part, and is not industry information.) Due to the fact that these are ink systems, the refills are generally available in color. Try getting a LaserJet to do that!!!!. Good luck! This will give an artistic quality to your Laser-quality hard copy which isn't even available with a laser! Just enjoy the aesthetics.

Conclusion

If speed is a real issue for you, then nothing I've said is going to make a difference and you're going to get the laser printer. However, if you're not a speed freak by nature and you're open to suggestion, here's the suggestion: buy an ink-jet printer. You won't be sorry.

For all these reasons, your next printer may be a laser, but my allegiance will almost certainly remain with the ink jet.

*(This article was originally published in
PC Report by the Boston Computer Society.)*

Technical Info for PCjr Serial Port

Here is some useful information on the PCjr serial Port:

The communications adapter provides an EIA RS-232C electronically -compatible interface. One 2 by 8-pin Berg connector is provided to attach to various peripheral devices.

The voltage interface is a serial interface. It supports data and control signals as follows:

Pin A04	Transmit Data
Pin A08	Receive Data
Pin A03	Request to Send
Pin A07	Clear to Send
Pin A06	Data Set Ready
Pin B02-B08	Signal Ground
Pin A05	Carrier Detect
Pin A02	Data Terminal Ready
Pin B01	Shield Ground

The adapter converts these signals to/from TTL levels to EIA voltage levels. These signals are sampled or generated by the communications-control chip. These signals can then be sensed by the system software to determine the state of the interface or peripheral device.

Note: The above nomenclature describes the communications as a DTE (Data Terminal Equipment) device. Suitable adapters must be used to attach other devices such as serial printers.

Note: Ring Indicate is not supported on the PCjr.

Voltage Interchange Information

Interchange Voltage	Binary State	Signal Condition	Interface Control Function
Positive Voltage=	Binary (0)	=Spacing	=On
Negative Voltage =	Binary (1)	=Marking	=Off

Voltage Interchange Information

	Invalid Levels
+15 Vdc	-----
	On Function
+3 Vdc	-----
0 Vdc	Invalid Levels
-3 Vdc	-----
	Off Function
-15 Vdc	-----
	Invalid Levels

The signal will be considered in the "marking" condition when the voltage on the interchange circuit, measured at the

interface point, is more negative than -3 Vdc with respect to signal ground. The signal will be considered in the 'spacing' condition when the voltage is more positive than +3 Vdc with respect to signal ground. The region between +3 Vdc and -3 Vdc is defined as the transition region, and considered an invalid level. The voltage which is more negative than -15Vdc or more positive than +15 Vdc will also be considered an invalid level.

During the transmission of data, the "marking" condition will be used to denote the binary state 1, and the "spacing" condition will be used to denote the binary state 0.

For interface control circuits, the function is "on" when the voltage is more positive than +3 Vdc with respect to signal ground and is "off" when the voltage is more negative than -3 Vdc with respect to signal ground.

Output Signals

Output 1 (OUT 1), Pin 34; Output 1 of the 8250A is not supported in PCjr hardware.

Output 2 (OUT2), Pin 31; Output 2 of the 8250A is not supported in the PCjr hardware.

It's Not Only AS EASY AS.....

If you need a powerful, easy-to-use spreadsheet that works just like you know what Lotus software, you need the shareware program As Easy As (Disk #86 in the jr Newsletter Software Store). It's not only "as easy as", it's just about as good as. And you can try it for \$5.95!

CORRECTION:

Warren Strunk wrote to tell us about two errors in his letter, about adding a 3.5" drive to Junior.

The config.sys file on Disk #1 should be:

DEVICE=JRCONFIG.DSK -t3 -d2 -c -x

And, a very important word - "able", was mistakenly typed "unable" in his summary, which would have led the reader to believe he was unable to copy back and forth, diskcopy, etc., when in fact he was ABLE to do so.

We regret the errors and hope no one was inconvenienced by them.

Archiving Program Saves Disk Space, Eliminates Hassles.

With so many good programs around, plus all the data files you generate in your own work, it's no surprise that most computer users have the need for more disk space than what is available.

You're faced with three choices:

- * Do some ruthless culling of your files. (WARNING: the file you purge because you haven't used it in months, may be the one you will unexpectedly need the week after it was purged.)
- * Buy more disk storage space, either through lots of floppies or a hard drive. (WARNING: this costs money you might rather spend on other upgrades of your computer.)
- * Use file compression to archive your files and make the best possible use of your existing space. (NOTE: This can reduce files to as little as 25% of their original size)

LHa v2.11 (Disk # 128 in the Software Store) is an archive program similar in concept to PKZIP (Disk # 104 in the Software Store). Both take binary or text files and make them smaller in size.

The amount of storage space saved varies with the type and size of the file(s) compressed. You can reduce files to as little as 1/4 or 1/3 of their original size. In addition LHa and PKZIP are handy to put a whole group of files into a single archive file that can be re-opened to restore all the individual files when needed.

PKZIP and LHa are very similar in most respects. Each has a few features which make it the archiver of choice in certain situations.

If speed of archiving and de-archiving is very important, PKZIP may be all you need. It's almost always the faster method.

If you want to have the tightest possible compression and are willing to wait a few more seconds for the process to occur, then LHa is probably the better choice.

To run a comparison between the two programs, I chose a subdirectory on my hard drive which contained 54 files which in LHa original compressed form occupied a total of 2,082,340 bytes

Original Files	2,082,340	100%
PKZIP -	1,570,806	75%
LHa - 2.11	1,124,199	53%

One advantage to the use of LHa, is that it can handle files even larger than 1 Mb in size, even if the available RAM for processing is as small as 200 Kb. I compressed all the files on a hard drive, 16,992,256 bytes in 504 files and 21 directories. It compressed the entire hard drive to

42% of its original size. I can use DOS Backup and Restore to take the back-up off the hard drive and save it on floppies. It will cut the time I spend feeding floppies into the machine to less much less half the time it would take to do a standard file-by-file backup.

If your machine has no hard drive, LHa can be a great help in allowing you to save your data in a compact form. When your stacks and boxes of diskettes gets overwhelming, think of how nice it would be to have those files reduced to less than half the disk space. It not only saves disk space, it makes finding a file or group of files easier, because there are only half as many diskettes to search through before you find it.

LHa offers a variety of methods to archive your files. With the basic selections, one can:

- * compress and add files to an archive
- * Update an archive by adding any new or changed files
- * Move files into the archive and automatically erase the original files after they have been added to the compressed archive
- * Freshen archives so that any updates of the files contained in the archive are included in the archive.
- * Delete a file or group of files directly from the archive
- * List files within the archive, including pathnames, if desired

Two special features which will make LHa a favorite utility are its ability to:

- * Test the integrity of the archive with a CRC check
- * Create self-extracting archives that can be invoked with one command that uncompresses the archive and immediately begins your program.

LHa v2.11 is Disk # 128 in the Software Store, page 23.

Elementary School Teacher Offers Junior Help To Others

Noel McDonald, of Evansville, Indiana, informs us that currently uses 30 PCjrs in his school. The computers all have just 128K and a single disk drive.

He makes heavy use of public domain and shareware programs such as Word Processing for Kids, Googol Me Fast Type, Animal Math, Alphabet, Hangman, and so commercial software as well.

He says, "Any elementary schools getting started Computer Ed might want to call me. I have learned a lot lessons during the past five years."

Noel can be reached at (812) 477-8915. His school Hebron School, 4400 Bellemeade Ave., Evansville, IN 477

Reader Feedback

(Continued from page 7)

Classifieds Work! And Request for Disk Cache

First, a tip of the hat. Today, I called one of your classified advertisers, the first time I've ever done that. After three tries I got through and was informed that three other calls had already come in. This from a classified in the latest issue, which only arrived a few days ago. If I ever sell jr stuff, I'm coming to you.

On another topic, I'd welcome suggestions from jr hard drive users re a good disk caching program that works with the jr and device-driver-based hard drives. The version of PC-Cache that came with PC Tools Deluxe 5.1 and 5.5 seemed to work OK, but then I upgraded to Vers. 6.0, which ignores my hard drive. I tossed the older versions, so I can't easily go back. Dumb! hand onto those disks 'till you're sure you won't need them, folds! I've experimented with shareware cache utilities such as Dcache, Hyperdisk and Dfacc. Either they don't work or they seem to load but I see no improvement in system performance. All advice cheerfully accepted.

Ron Legro, Milwaukee, WI

Reader Offers Help With Speech Attachment

While reading the Reader Feedback column in the jr Newsletter (April, 1991) concerning the speech attachment, I realized I might have something which could help my fellow jr owners. I bought a speech attachment, however it came with very little documentation. I contacted IBM and was pleasantly surprised by their response. IBM sent me, free of charge, two very helpful reproductions of booklets for the hardware.

I built two programs in BASIC which helped my children learn to use the keyboard. I would be happy to make reproductions of the documentation and a disk with BASIC subprograms and programs for a handling and shipping charge of \$10. The subprograms provide an interface between BASIC and the speech attachment. The programs provide examples of using the subprograms to drive the speech attachment. I have copies of the following documentation:

Installation Instructions

A Guide to Writing BASIC Speech Programs for the IBM PCjr

Test Tag N-Speech Attachment Vocabulary Test

IBM PCjr Speech Attachment Technical Reference

Greg Davis, 7428 E 68th St., Tulsa, OK 74133

A Program to Compile Batch Files

(Continued from page 11)

more batch commands which will:

- * easily get system information for use in the batch files
- * control the flow of the batch program
- * control text printing on the screen, making line draws, blinking, or highlighting a simple procedure
- * allow for maximum string manipulation
- * enable maximum user input from the keyboard, allowing straight-forward construction of inter-active batch files in ways not available with traditional batch files.

Powerbatch is Disk #127 in the Software Store on page 23.

WHEN YOU MOVE.....

Please notify us at least two months before you move, or change the address you want us to send jr Newsletter to. We update our database on a monthly basis, and send the newsletters out about the first of every month, so we need advance notice in order to keep you from missing an issue.

Please do not expect us to send you your missing issues when you have failed to give us adequate notice of your new address. We like to be helpful, but this kind of expense we can't afford.

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5 1/4" or 3 1/2" External Disk Drive, Case & Power Supply, and 512K Memory.....	\$326.
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Quick Silver Cartridge... ..	\$30.
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A Bit of History

(Continued from page 1)

They include four game cartridges, an easy-to-use word processor, a communications program and updated versions of several existing diskette programs.

The IBM PCjr offers a number of advanced features for a computer in its price range, including:

- * A 16-bit microprocessor with capabilities generally found only in larger, more expensive personal computers;
- * Microchip technology that eliminates some adapter cards and improves the machine's price, performance, size and weight. For example, the game controller, serial port, light pen interface and color graphics capabilities are located on the computer's main circuit board;
- * A 62-key cordless keyboard that communicates with the system unit by an infrared signal, allowing line-of-sight use up to 20 feet away;
- * Each key may be programmed individually so that users can customize the keyboard for individual applications. A single keystroke, for example, can initiate a series of program steps;
- * Power-on self test diagnostics;
- * Advanced graphics and sound capabilities; and
- * An optional, internal device to communicate by telephone with other computers.

An IBM PCjr equipped with a slim-line diskette drive can store 368,640 characters of user memory. The new IBM Personal Computer Disk Operating System (DOS) 2.1 is compatible with many other diskette programs written for other IBM Personal Computers. Users may then access more than 30 programs offered by IBM, including IBM Easywriter 1.15 and IBM Multiplan 1.10, as well as hundreds of other programs that are commercially available.

A configuration expected to be popular for family use in the home would include the enhanced diskette model with a connector for TV, an IBM PC Compact Printer, DOS 2.1 and Cartridge BASIC.

The IBM PCjr includes several features specifically designed to assist new users to get started. They include:

- * "Keyboard Adventure," a program that is built within the system's Read Only Memory (ROM), uses graphics, colors and sound to highlight the keyboard;
- * "Exploring the PCjr," a tutorial diskette provided with the enhanced model, acquaints the user with the system unit, the keyboard and its functions, diskette storage and the disk operating system, programming in the BASIC language and optional printers; and
- * "Your IBM PCjr Sampler," another diskette provided with the enhanced model, features easy-to-use sample programs that enable the user to prepare budgets, write letters, organize files, address and phone lists, and manage a variety of everyday activities.

Entry Model

The IBM PCjr features a 16-bit 8088 microprocessor, 64KB of Permanent Read Only Memory (ROM), 64KB of user memory, a cordless 62-key keyboard, a desktop transformer, two slots for ROM cartridges, an audio tone generator and a 12-month warranty. With an adapter or connector, the PCjr can display up to 40 columns of information on a television set, composite display or a direct drive color monitor such as the IBM Personal Computer Color Display.

The PCjr keyboard is battery powered and transmits keystrokes to the system unit by infrared signals at a distance of up to 20 feet. Each of its 62 keys can be programmed, and special function keys are color-coded. When more than one PCjr is being used within a room, an optional six-foot adapter cord is required to connect the keyboard and system unit.

Diskette Model

The enhanced model includes an additional 64KB of user memory for a total of 128KB, as well as a 360KB, dual-sided, slim-line diskette drive. It also has the capability to display up to 80 columns of information.

Both PCjr models come with a GUIDE TO OPERATIONS manual and a HANDS-ON BASIC booklet, which instructs users in the BASIC programming language and computer concepts.

IBM PCjr & CONVERTIBLE SPECIALS

PCjr	CONVERTIBLE																																																																												
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IBM PCjr Options

Options for the PCjr entry model include a 64KB user memory and display expansion card and a slim-line 360KB diskette drive

Users of either model also may install an internal asynchronous modem (U.S. only) for communicating with other computers, a connector for a television set, joystick controls, a parallel printer attachment, keyboard overlays, a power cord for the keyboard, and adapter cables for the IBM Personal Computer Color Display, cassette recorder and a serial device for connecting a printer or modem. There are also connectors for audio output and a light pen, as well as a carrying case.

Individually coded connectors, located on the back panel of the system unit, are used to attach a cassette recorder, one or two joysticks, external amplifier and speaker, the keyboard connector cord, a television set, the IBM Color Display and other options.

Service

The IBM PCjr, which includes a 12-month warranty, can be serviced by Authorized IBM Personal Computer Dealers, IBMduct Centers and IBM's Customer Service Division/Exchange Centers. Warranty extensions and maintenance agreements will be offered through IBM's Customer Service Division, as well as through a Dealer Service Option package available to authorized dealers. Some dealers may offer their own warranty extension and service plans.

New Printers

IBM also introduced two new IBM Personal Computer printers. The IBM PC Compact Printer is a low-cost, table-top thermal printer for use with the PCjr. Suitable for most home uses, it prints up to 50 characters per second, and uses single sheet, fanfold or continuous roll thermal paper. An optional adapter connector allows the IBM PC Compact Printer to be used with the IBM Personal Computer and Personal Computer XT.

The IBM Personal Computer Color Printer, for use with the IBM PC and the PC XT, can produce documents and graphics in as many as eight colors. It operates at 200 characters per second (CPS) in draft mode, 110 CPS for correspondence, and 35 CPS for letter quality documents, and can accommodate single sheet, fanfold and continuous roll paper up to four pages thick and nearly 15-inches wide.

New Programs

IBM introduced a wide range of new and updated programs. They include Disk Operating System (DOS) 2.1, which is available for all IBM PCs and is required by the PCjr if users intend to operate diskette programs.

Also announced was the IBM PCjr BASIC cartridge. It supports enhanced display and sound capabilities and supports light pens, joysticks, three-voice sound and asynchronous communications.

The IBM PCjr, IBM's newest and most affordable computer, can help people with no previous computing experience to prepare reports and letters, manage personal finances and organize household record-keeping. Advanced features allow pre-schoolers, students and adults to use the power of the PCjr for education and entertainment applications, as well.

Using materials such as the HANDS-ON BASIC booklet included with each system, the optional cartridge BASIC, and the new BASIC MADE EASY FOR THE IBM PCjr, students can learn to write computer programs.

With the variety of diskette applications available, teachers can use a PCjr with the diskette drive option to compose course material, prepare quizzes, grade tests, record student's scores and monitor individual and class trends.

The PCjr can be connected by telephone to computer information networks to obtain stock prices and financial data, news, weather reports, movie reviews, airline schedules and "shop-by-computer" services. With available options, it can also send and receive "electronic mail". (IBM sure was proud of its baby way back in 1983, wasn't it?--ED.)

Disk Operating System - What is It?

(Continued from page 2.)

A Few Last Comments:

'There are a few things to keep in mind when working with D.O.S. (Really, there are lots of things to keep in mind, but here are a few of the most essential not emphasized elsewhere.):

CAPITAL vs. lower case LETTERS:

In most books, including the D.O.S. manual itself, commands are usually shown in capital letters to help make the commands stand out in the text. But actually, we usually type lowercase, since that it's more convenient. Don't worry that you have to type things carefully in capital letters. Do worry that what you type in is accurate. If you aren't careful, you may ruin your work or else get chided by D.O.S. with the complaint: BAD COMMAND or FILE NAME.

"QUOTES" vs. NO QUOTES:

There can be some confusion using D.O.S. for people who also use B.A.S.I.C. programs. This is because the rules for each are in many ways the same, in many ways similar, and in many ways very different.

One of the biggest areas of apparent confusion is that when you are typing in filenames, quotes are required by B.A.S.I.C., but not D.O.S. Don't use quotation marks with D.O.S.!

(Continued on page 20)



Disk Operating System - What is It?

(Continued from page 19.)

PC-STYLE. Perhaps the best of many programs that help you make what you write more readable. Jim Button made this a very slick, useful tool for improving your writing. It reads and analyzes what you write, then gives you a detailed analysis based upon several useful standards. Fast, easy to use. 128k (Disk #76)

PC-WRITE. This extremely popular word processing software 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 and needs 256K to run without the spell checker, which needs 384K. Version 3.02, the most powerful, needs 512K. (Order Disk #1 for 128K V2.5. Order Disks #2A and 2B for V2.7. Order Disk Set #1 (3 disks) \$12 for V3.02.)

SHARESPELL. Spelling checker that works independently of your word processor. Can check spelling of any text file with its 52,000 word dictionary. Will also use custom word list you make. Works with all word processors. 384K ok (Disk #94)

Data Bases

3 X 5. An information management program that works just like a 3x5 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)

FILE EXPRESS. (V4.22) Very easy to use database manager. Extensive menus and prompts to guide you. Excellent choice for maintaining mailing lists, etc. Many powerful features. 256K (Disks #83 and #84)

MR. LABEL. Extremely versatile, this software enables you to make labels ranging from the very simple to the very sophisticated. It's the best of many we've tried. 128K ok. (Disk #97)

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)

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)

*For other software titles available,
see the May issue and the
additional listings cited on page 22.*

Helpful References:

Some of the above information was extracted from Peter Norton's (of Norton's Utilities software program fame) book, "Discovering the IBM PCjr Home Computer," published by Microsoft Press. It and its companion book, "Exploring the IBM PCjr Home Computer," are excellent reference books for the PCjr owner.

A more in-depth look at D.O.S. can be found in the book "Running MS DOS (Second Edition), written by Van Wolverine and also published by Microsoft Press.

Other helpful hints can be obtained in the D.O.S. 2.1 manual, page 1-16 through 1-27.

Other sources of helpful information:

- 1 jr Newsletter (We're here to give each other support!)
- 2 Published books (especially your D.O.S. manual—review it periodically!)
- 3 Diskette Tutorial Programs (ATI programs are good).
- 4 Local Computer Outlet Store Classes (but not most salespeople!)
- 5 Private Tutors
- 6 "On Line" Help Screen Programs, including PC-Prompt (Disk #23 in the jr Newsletter Software Store), PC DOS HELP (Disk #24 in the jr Newsletter Software Store), and COMPUTER TEACHER (Disk #77 in the Jr Newsletter Software Store.)

Filenames and Extensions:

The filename can be made up of eight letters (just like the name "file-name" has only eight letters).

The extension starts with a period and has a maximum of up to three letters. The filename and extension can be made up of any combination of the following letters and symbols:

A through Z
0 through 9
!@#\$%_{}|^'~^

Do not use the following as filenames or extensions:
CON, AUX COM1, COM2, LPT1, LPT2, LPT3, PRN, NULL.

In instructions and manuals, the word "FILESPEC" refers to the fact that they want you to use a specific filename.

Use any combination of letters and symbols which will quickly and easily help you identify your file. Using the same extension for similar kinds of files helps you to group them together for easy retrieval (ie.: listing all you LeTtErS with the extension symbol ".LTR" or dating your file from SEPteMBER 1985 with a ".SEP" or ".85"). The following table shows the file extensions that are frequently used to identify specific kinds of files:

.BAK BAcKup files
 .BAS BASic programs
 .BAT BATch files
 .COM COMmand files
 .DAT DATa files
 .DOC DOCumentary or
 .INS for INStructions) files
 .EXE EXEcutable programs
 .LST File containing LiSTs
 .NEW New files (vs.
 .OLD for OLD files
 .LTR Files of LeTTeRs
 .COR CORrespondence
 .SYS operating SYSTems programs
 .TMP TeMPorary files
 .TST TeST programs
 .WRK WoRKing files

Global or Wildcard Characters:

Global Characters, also called "Wildcard Characters," are used for special purposes when naming groups of file names. There are two global characters: "*" and "?".

The asterisk (*) denotes the substitution of any character or characters following its position in a filename or extension (only up to the period after the filename when used with a filename that has an extension). Here are some examples:

. denotes all files on the disk

*.BAS denotes all files with an extension of ".BAS" (Like when you want to copy onto another disk all the B.A.S.I.C. programs but nothing else.)

TEST*.UH denotes all files with the name "TEST" in the first four positions of the filename (ie.: TEST1.UH, TEST2.UH, TEST-A.UH, TEST-B.UH, TESTFILE.UH, etc.)

TEST*.T* denotes any file as in the above example, but also having a "T" in the first position of the extension (ie...: TEST1.TMP, TEST1.TST, TESTW.TOP, TEST85.TUE, TEST4.THR, but not TEST1.LST or TESKIP.TMP).

The questions mark (?) character is used to substitute for just one character in the filename or extension. Here are some examples:

TEST?.UH denote a filename with one variable character in the group of files. (ie...: TEST1.UH, TEST!.UH, etc.)

TEST-?B.T?P denotes one variable character in the filename and one variable character in the extension (ie...: TEST-AB.TOP, TEST-1B.TMP, etc.).

The Wildcard Characters are often used when you want to use the following commands:

COPY COPY *.* B: Copies all the files on the current disk to the disk in drive B (without erasing the files already on the disk in drive B.)

DIR DIR *.BAS 'List all the names of the files on the disk which have the extensions ".BAS" (all B.A.S.I.C. programs).

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

PCjr 640KB w/Hotshot - 1 floppy drive - jr color monitor jr keyboard, Manuals - DOS 2.1 - 2 joysticks - basic cart. - jr manuals - some software - parallel printer sidecar power unit - ready to run - \$400.00 + SH. Keith 815-459-2011.

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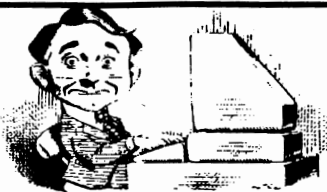
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ERASE ERASE MYFILE.* Erase all files named "MYFILE." no matter what the extension is. (If only one file is named "MYFILE" with a three letter extension—such as MYFILE.LST—typing it with an asterisk saves you two key strokes.)

RENAME Ren B:HARDWARE *.LET This renames the file "HARDWARE" (which has no extension) on the disk in drive B so that it has an extension ".LET." (Again, this saves you several strokes. You don't have to type "HARDWARE" a second time as in REN B:HARDWARE HARDWARE.LET.



Need Help?

The following disks from the jr Newsletter Software Store can help you to get the most out of your junior. To order, see the coupon on page 23.

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The software in the jrNewsletter Software Store is the best public domain and user-supported software for the PCjr we've been able to find. All software has been tested on our PCjrs and is highly recommended. Some of the programs are equal to or better than commercial programs costing hundreds of dollars. These are offered for you to try at \$5.95 per disk. Some shareware requires additional payment if you continue to use it.

Software Listings in This Issue:

Art & Music, Page 6.

Home & Family Management, 6 & 7.

Print Utilities, 7 & 9.

Spreadsheets, 9

Utilities, 9, 11, & 13

Writing Essentials, 13 & 20

Data Bases, 20



*** NEW * POWERBATCH.** Compiles batch files into .EXE files, which run as much as three times faster. Additional commands add power, control, & flexibility. Requires DOS 3.0 or above. (Disk #127)

*** NEW * LHA V.2.11** Powerful archive software will compress even more than PKZip, (though not as fast). Many extra features to update, delete, list files in archive, even extract and run. 256K (Disk #128)

*** UPDATE * PCJR COMPATIBILITY DISK V4.0.** Annually updated list of hundreds of software titles, includes PCjr compatibility info, tips on running software, and how to make some "in-compatible" software operate. Powerful search feature finds titles quickly and easily. 128K ok. Updated April 1991. (Disk #60)

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- 49 DOSAMATIC
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- 51 PRINT HANDLER
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- 57 HOME BUDGET MANAGEMENT, 128K
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- 58 HOME INVENTORY
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- 61 BOYAN
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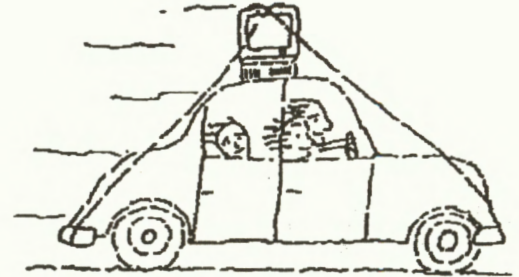
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