## Get Super Sound From Your PCjr

(Part II)
By: John E. Wilson

In last month's article covering the sound generating abilities of the PCjr, we talked about Junior's specialty sound hardware and about the several ways that Junior is able to create and to output sound. In this article we will put this hardware to work and you can begin to make beautiful music with Junior.

Before we start making music and sounds with the computer, we need to briefly go over what sound is and to define some terms that we will be using. Sound is a series of pulses of slightly compressed air. The pulses are made by some vibrating object, such as the thin head of a drum, or the paper cone of a speaker, or someone's vocal cords. These pulses are usually referred to as "sound waves", and one pulse, or one wave, constitutes one "cycle". The number of cycles that there are in a one second period of time is the "frequency" of the sound. Quite often in reading about sound you will encounter the word "Hertz", and its abbreviation "Hz". This is a widely established unit of measure for anything that comes in periodic waves, including sound waves. One Hertz is one cycle per second.

The ear drums in our ears respond to these pulses of air with vibrations of their own and transmit signals, through our nervous system, to our brain where they are interpreted. Closely spaced sound waves - high frequency sounds - make, what we perceive as high pitched sound, and conversely, low frequency waves make what we perceive of as low pitched sounds. The amount of en-
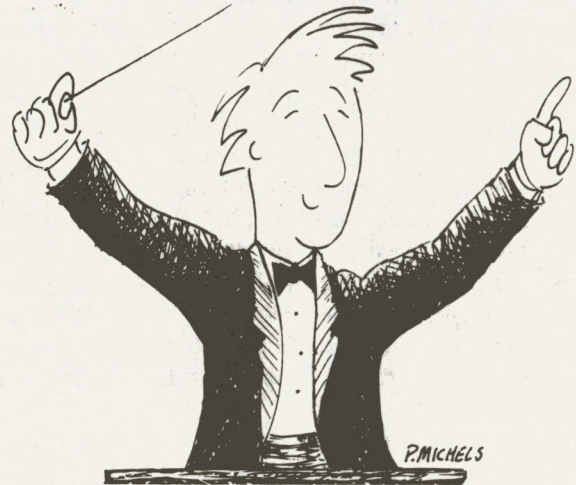
Jerry Putz warms up before composing music on his PCjr

ergy in the sound waves causes the loudness, or the "volume", of the sound. Loud sound waves don't come any faster than soft sound waves and there aren't more of them, there is just more to them.

We have attempted to cover an exceedingly complicated subject in a couple of short paragraphs. Sound is more than just pulses of air, and sound waves are very complex, being made up of waves upon waves with intricate variations of frequency and volume. Never-the-less, we have covered most of the aspects of sound that will be important to us in creating sound on our PC Juniors. The computer sounds we create will actually be made by a speaker. The computer will send signals to a speaker that will cause it to be pulsed in and out to make sound waves. We will be able to control the frequency of the sound waves, and, to some extent, the volume of the sound, but we will not be able to reproduce the complex sound wave patterns created by a piano or by a violin. Our sounds will be "computer" sounds, but they will be more complex than most other computers can create. Even the ability to control volume, as you can do with Junior, is non-existent on most computers.

A person with very good ears can hear sounds ranging from about 20 to 18,000 Hertz. Your computer can in theory create sounds from about 20 to over one million Hertz, but in reality the speaker that you use with the computer will set the frequency limits of the sounds you create. As the first article pointed out, you can attach an external speaker to Junior, and thus you have the poten-

PCjr Lives!

Word Processors and Spreadsheets Explained
by Larry Kaja

In the world of PCs, a "Word Processor" is probably the most popular program. Writing Assistant, which you may have, is a word processor. Personal is another I've used. There are plenty of word processors to choose from. Word processors are often called "editors".

A word processor is a program that allows you to write, change, store, and print letters, reports, and other documents. If you've used Writing Assistant, then you have some idea of what it can do. A word processor allows you to change and move words or sentences, align the margins to make the print come out even, merge other files into the one you are writing, check spelling, and many other things. Most of these things can't be done on a regular standard typewriter.

I strongly recommend that whenever you are typing information into a word processor, you **save the information often.** You'll be very disappointed if you've been typing for an hour or so and suddenly your PCjr loses power or locks up. You've just lost the whole hour! Remember: **SAVE OFTEN!**

What is a Spreadsheet?

Spreadsheet is another term you'll hear often used around PC users. A spreadsheet is a program that contains a grid of vertical columns and horizontal rows that can display alphabetic and numeric information that can be automatically calculated! (say WHAT??) That's the first answer *I* got and that was also my first reaction.

Okay, let me draw you a picture of the GRID, which looks much like a financial ledger. It has letters along the top (columns) and numbers down the side (rows):

	A	B	C	D	E	F	G	H	I	J
1										
2										
3			XXX							
4										

The COLUMNS have alphabetic characters that start at "A." The ROWS have numbers that start at "1." Both the COLUMNS and ROWS can go as far as the program allows. Every box (called a cell) has an address. In the above example "XXX" is located at cell location C3.

Here's an example of how to use a spreadsheet to do simple financial calculations and keep records.

SPREADSHEET EXAMPLE

	A	B	C	D	E	F	G		M	N
1	TITLE: Ex	xpenses f	for 1989							
2		JAN	FEB	MAR	APR	MAY	JUN		DEC	TOTAL
3	Car Pmyt	$150.00	$150.00	$150.00	$150.00	$150.00	$150.00	-->	$150.00	
4	Gas	$67.13	$48.64	$46.46	$35.35	$36.66	$13.14	-->	$35.00	
5	Phone	$23.00	$23.00	$23.00	$23.00	$23.00	$23.00	-->	$23.00	
6	Electr	$89.73	$91.07	$63.18	$91.21	$97.10	$88.17	-->	$97.57	
7	Water	$7.53	$8.15	$7.60	$7.21	$6.15	$8.07	-->	$7.15	
8		JanTot	FebTot	MarTot	AprTot	MayTot	JunTot	-->	DecTot	
9		***	&&&							%%%

I've filled in the above spreadsheet and made it just large enough to show it works. In the cells B2 through M2 I've listed the months in 1989. In cells A3 through A7 I've entered the names of a few expenses. Starting in cell B3 I've entered the actual money amounts I want to keep track of. So far, so good?

Notice cell N3 (### is just so you can find it). I put a formula in this cell. It's called a *formula cell.* The formula, which is not actually displayed in the cell, will look something like: @ADD(B3..M3). What this formula says is "add the values in cells B3 through M3 and put the total here (N3)" Now, whenever you change or add a value in cells B3 through M3, the total in N3 will automatically re-calculate the new total! The same holds true for the formula cell in N4 (@ @ @) except *this* cell will add B4 through M4.

You will find a "status area" at either the top or the bottom of the spreadsheet. Whereever your cursor is located, the contents of that cell will be displayed on the status line. If, for example, your cursor is at location A4 then "Gas" will be displayed, and so forth.

These formulas are entered all the way down to, and including, N7. These formula cells will keep a running total of how much you've spent for each item throughout the year. The formula in B9 (***) will add B3 through B7 which will show you, at a glance, the total of your January bills. Cell C9 (&&&) will show you through February's total bills, and so forth, through December. The formula at N9

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. I have been trying to run the following: Great Chefs, Arkanoid and Modem Wars. These all use graphics and won't work, even the Great Chefs program which says right on the package that it's for the jr. and the Tandy. (I have had the Tandy mod done and it is OK.) Here's the CONFIG.SYS which boots my 640k jr. with a 3.5" second drive;
DEVICE=DX2MEM.COM
DEVICE=DRIVER.SYS /D:0 /F=0
DEVICE=DRIVER.SYS /D:1 /F=2
DEVICE=ANSI.SYS
DEVICE=FAST.SYS
DEVICE=READCLK.SYS
BREAK=ON
BUFFERS=15
FILES=35

G. Milton, Milwaukee, WI

A. The programs you are trying do not show up on our list of jr compatible software. The only suggestions we can make are:
(1) Try booting up with a super-simple DOS such as no memory recognition, and no second drive. Some programs REALLY mean 128k! (Remember the original Flight Simulator, and the early COPYII-PC copier and unprotector?)
(2) Take out the ANSI.SYS driver and try again. It really is a dinosaur anyway (and it's like a TSR) continually getting in the way and slowing things down. Example: VUIMG, a .GIF image viewing program we tested, refused to put ANY image up on our screen with ANSI.SYS loaded! If you load it just to get colors while in DOS, there are other, better ways. Check the Software Store for the AUTOSETUP disk or some of the other utilities which handle the screen.

Q. With 512k of memory and one drive, how can one load a two-floppy disk program into memory? T. Thomson APO, NY

A. Whew! Two 5.25" standard disks can hold as much as 720k - 800k of data, and that just won't go into 512k let alone leave room for the program and video and operating system and... well, you get the point. What you might want to try is this: Make a ramdisk of a size to hold ONE of the disk's files (the smaller of the two) and copy the necessary files to the ramdisk. You can then put the other floppy disk in your A: drive. For this example we'll call the ramdisk "C:" Now you must type in "PATH=A:;C:" Of course you could put this in a little .BAT file. Do not type the quotation marks and be sure to note the colon AND the semi-colon after the A. When the program runs, it will look for whatever files it needs, first on the A: drive and then on the C: drive. If there happens to be one or more sub-directories on the A: or C: drives you MUST include them in your list of places to look, separating each complete path with a semi-colon. When you're done be sure to set the PATH back to its original "no path" state by just typing PATH followed by a semi-colon, no spaces (i.e. PATH;) then press Enter. Do some experimenting with the size of the ramdisk and unload all TSRs or anything else which uses memory.

Q. Have upgraded my sidecar to 736k by moving the pin as instructed. This does work, but only with JRCONFIG.DSK. My PCJRMEM.COM no longer boots up or runs. Is there any way to use both? This is especially important because now Writing Assistant, which is set up to be loaded onto a C: ramdisk no longer copies to the ramdisk. I use the A: drive for data only. How can I get JRCONFIG to copy it to C:? I would also like to configure to run Accolade's Test Drive if possible. J. Sawyer Gastonia NC

A. We'd need your config.sys and autoexec.bat files to be

Questions and Answers

(Continued from page 3)

sure, but our guess is that you are not making a large enough ramdisk for Writing Assistant to be loaded into. The default ramdisk in jrconfig.dsk is really small and generally used only to take up space at the low end of memory. This does, however, speed up the operation of the jr immensely. You must separately make the ramdisk as large as the one your pcjrmem.com made. Use -e2 to be sure you'll have enough directory entries for the number of files Writing Assistant uses. Use -sn (n = size of ramdisk) large enough to hold all the necessary files. Another possible way is to use the jrconfig.sys version without a ramdisk, then separately install an adjustable ramdisk. This sometimes solves problems of this kind for us.

Our Elves tell us that Test Drive will run (four-color) in as little as 384k of free RAM. You can be sure of having enough video RAM reserved by having at least -v64 in the jrconfig.dsk statement.

Q. King's Quest (up to ver. III) and Flight Simulator run very well on our jr. and are excellent software. My only concern is that the disk drive seems to run excessively, especially in King's Quest. There seem to be hidden files on these disks and they will not copy to a ramdisk, which I think would make considerable performance improvement, as well as less wear and tear on the floppy drive. Can you help? P. Valenzuela, somewhere out there...

A. Because there is no way to use "DISKCOPY" to a C: ramdisk there is a problem. For small programs with various hidden or copy-protected files the work-around routine usually goes this way:
(1) Make the ramdisk, calling it C:
(2) Use whatever "INSTALL TO HARD DISK" file is supplied.
(3) Use the program... CAUTION! Do not crash! See dangers below!
(4) UN-INSTALL back to floppy at the end of the session. The dangers are that there may be a limited number of "installs" allowed and if you forget to "un-install", which resets the install counter back to zero you may be out of luck. Same thing if the computer crashes before you get a chance to un-install. There is no problem if there are unlimited "installs" allowed.

Some programs will allow, after installing to a ramdisk, the copying of the now un-hidden files back to a floppy. From then on, all you have to do is copy them from this floppy to the ramdisk whenever needed.
For Flight Simulator versions later than 1, make the PATH=A:;C: and make a note of whatever files it looks for

and cannot find as you go. Be sure to make and use DISKCOPIES of the original disks to do the following and do any patches to these copies, first. You might want to use the DOS APPEND command to link the A: and C: drives but be sure to read the DOS manual first. You CAN link the drives as if they were files, but watch out for the dangers as outlined in the manual! Now, back to the actual technique. Don't change the disk in A: while you are trying to run. Each time the program aborts (or dies) it names the files it is looking for. When this happens, copy the named file from the other floppy disk to the ramdisk. Soon, you'll realize which ones it needs by the pattern of filename and /or extension being repeated. Copy the file(s) to the ramdisk as needed, start up again and repeat. This will take a little time and note-making. You'll get further along into the program each time. When Flight Simulator finally runs OK, you'll know you got 'em all on the ramdisk. Copy the loaded ramdisk to a new, formatted, clean floppy and the next time you want to fly, just copy this floppy to the ramdisk first.

We haven't done this to King's Quest, but try out the logic there, too.

Q. Is there any way to avoid the floppy shuffle in Professional Write? W. Weyant Bloomberg, PA

A. Yep. This is really related to the previous question, so we'll give you one routine which a reader has kindly supplied and which works. This should be a BATch file on your COPY of the PW working/boot disk!
(1) Make a RAMdisk of at least 100k (We'll call it C:)
(2) copy pw.com c:
(3) copy pw.hlp c:
(4) copy pw.pri c:
(5) copy pw.set c:
(6) copy pw pmenu.exe c: (if Epson RX, for ex.)
(7) copy command.com c:
(8) set comspec=c:\command.com
(9) comspec c:\command.com (if DOS 2.1)
(10) path a:\;c:\
(11) cls
(12) c: (this gives you the c:> prompt)
Now put the PW Prog. disk in A: and type PW <Enter>
    Using the SETUP MENU on the PW disk:
SET DATA DIR A:\ (your data files will be here on A:)
WORK DIR C:\ (PW will look on C: for the rest)
There's not enough memory for the Dict. but there's no more floppy shuffle for the rest of the functions.

Now's the time to do your Family Tree!
All the help you'll need is on FAMILY HISTORY (Disk #33). See order form on page 23!
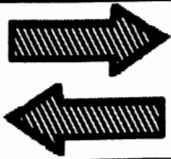
Reader Feedback
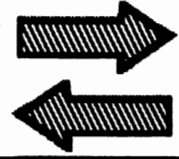
Experienced PCjr User Gives Update on His System

We had a long discussion by phone a couple of years ago and you ran an article on how I used my jr, in the December, 1988 issue.

Thought you might be interested in an update on the current configuration and its uses. Basic unit still has two 5-1/4" drives +512K Techmar jr Captain. DOS is still 2.1. I find little use for 3.30.

As a result of the article in jr Newsletter on PC Enterprises new 1024 Megaboard, I bought one rather than invest in a hard drive to run large programs such as PC-Write 3.03 or large spreadsheet files.

I visit a number of BBS's and have run into a virus several times. Using floppy disks with write/erase tabs in place have kept my files clean so far. This worry plus the necessity of backing up to a hard disk regularly led me to this decision.

The Megaboard installation was easy and with the very helpful phone assistance from Ms. Toni Rae Yobbi of PC Enterprises got it running in no time.

The "NRD" version of JRCONFIG along with LOWRD.SYS in the config.sys file sets up ram disk D: with about 90K of ram memory where I load comspec/command.com (it works!) along with regularly used files such as chkdsk.com, format.com, browse.com, pkzip.exe and pkunzip.exe. The autoexec.bat file loads these files.

Larry Newcomb's program really speeds up the operations by getting all of the operations out of the first 128K. The JR CONFIG program also gets the operating memory up to 736K as advertised!!

The operating memory is now about 615K and the mega-memory is set up as C: drive with 915K of ram disk. You could set up multiple ram disks with the software, but I didn't see any good reason to do this.

With large programs such as PC-Write a bat file loads the operating and support files such as spell checking, thesaurus, etc. to the mega-memory, leaving all of the operating memory available for large spreadsheets and much less wear on disk drive manipulating files.

Obviously you must copy all changed files back from the ram disk C: to the floppy. I use a program, COPYF.EXE from Stillwell Software (part of a program called FREEPACK.ZIP), to do this. My start-up bat file contains a reminder on exiting the program.

The communications program I use is Boyan 4.01 and files are up/down loaded from the C: ram disk. It is much faster this way and it cannot pollute my boot disks since they are out of the drive. I detected a virus about 6 months ago that attempted to write to the Command.com file loaded in the D: ram disk.

Here in Florida we are always concerned about hurricanes, so I sent the $25 registration fee for Storm6 -ver 6.0 - to the author, Tom Pesek, who sent by return mail a new personalized disk with 134 major storms since 1918.

These storm files are loaded at start-up, again by a bat file, the C: ram disk. It makes the searches for historical storms at any location much faster without wearing out the disk drive!

I am still using my jr about an hour or so a day keeping track of my investments as well as keeping up on the correspondence, playing a few thinking games and searching BB's for new ideas.

John Sellors, Jr., Sarasota, FL

Easy Fix Makes Trackball Work Though Manufacturer Says It Won't

In December of 1989 I purchased a Kraft TRACK-BALL for my PCjr. It did not work. I also have a 386 computer at home and it worked fine it.

Now, I did not buy the TRACKBALL for the 386, as my PCjr is "portable," and is set-up in my living room. The PCjr sits in an old stereo cabinet on wheels. Mostly games are played on it, (card games in particular, ROYAL SOLITAIRE and HOYLE'S BOOK of GAMES). QUICKEN, TURBO-TAX and word processing are being used regularly, also.

I called Kraft, to see if there was a "fix" or any input on how to use it on the PCjr. Of course there was none, but if they came across one they would notify me. Does this sound familiar?

Fortunately, I happened to borrow a break-out box from a friend and started experimenting with the ball. It has a very good test program, that comes with it. Opening the Common (Pin 7) and Shield (Pin 1) on the box made the ball work. It has been working ever since (Xmas Holidays).

I won't go too deep into this (probably can't), but apparently the PCjr can't generate the proper logic LEVEL signals (Minimum +5v & -5v), or it can't interpret the re-

Reader Feedback

ceived logic LEVEL signals. The chips use the power sup-ply's +12v and -5v voltages for this. Floating these volt-ages (+8v & -8V) makes it work. I don't know why. How about somebody experimenting with a battery to lift the -5 volts to say -9 volts to see if this works.

My System
1) Tecmar JrCaptain - 640K
2) Dualfont add-on
3) Tandy mod
4) Reset button mod
5) 3 1/2 drive A:
60 5 1/4 drive B:
7) ST225-20 meg Hard drive C: (bus extended type)
8) Quick Silver cartridge
9) Jr-Video cartridge
10) Keyboard adaptor (synectics) most keyboards work
11) Kraft Trackball

My Autoexec File
```
echo off
dualfont /t
speed
fastopen c:=25
path c:\;\dos;c:\PCTOOLS;
prompt=$p$g
MIRROR C:
cd\hdm
hdm
```
(Hdm is an excellent Hard Disk Menuing program)

My Config File
```
DEVICE=jrconfig.nrd -t3 -b2 -d2 -g -v32
DEVICE=driver.sys /d:0
DEVICE=ZANSI.SYS
DEVICE=KTRAK.SYS
LASTDRIVE=k
FILES=40
BUFFERS=32
```

I have one question. Has anyone tried putting the config.sys and autoexec.bat files on a cartridge, or adding them to the eprom on the hard disk controller card? A disk in drive a: could override this configuration.

P.S. Oh, by the way, in June I received a call from Kraft telling me that the trackball is not compatible with the PCjr. I told the embarrassed caller, I have it working now, thank you, and what I did to get it to work. It worked for me, and I hope it clears up some rodent problems out there. MY trackball has been working for 8 months with-out any problems.

Jerry Bednarz, Lackawana, NY

EDITOR'S NOTE; Very clever of you, Jerry! We hope other jr users will get their trackballs rolling with your sug-gestion. To answer your question, we don't know anyone who has done this, but we may hear of one if he/she reads this.

Comments on Mice, Bootsect, Disk Packing and Quicksilver

MICE - I have a jr with the Microsoft jr Booster with a mouse port. For several months I have been toying with the possibility to upgrade to a newer mouse. I have spo-ken with Microsoft Technical Support several times, stud-ied tech docs I don't understand and dissected the little buggers. Long story short - the Microsoft jr Booster "bus" port is incapable with the latest generation of Microsoft "bus" mice. Those which came with the booster are known as "green" button mice. The next generation of gray button mice in the "serial" version "may" have been configured to work with the boosters "bus" port according to Microsoft and Compuserve via an adapter sold by Solid Rock Electronics which is out of business. Microsoft has convinced me that it would be difficult, translates as ex-pensive, to configure their new "inport bus" "white mouse to jr.

The good news - The Microsoft PS/2 "serial" version "white" mouse is fully compatible with my jr. It's operation and feel are exquisite. It has significant improvement over previous versions in that all the electronics are inside the mouse that allows it's resolution and sensitivity with-out requiring add on hardware and sophisticated soft-ware.

More than 360kb on floppies - A program was men-tioned in the August newsletter, FORCE18, which would format 360kb floppies to 400kb. For about a year a shareware program called MAXI has been around which will format 360kb floppies to 420kb. A new version is out which will format to even higher capacities. It was able to format a Maxell DS/DD diskette in my jr's original Qume (IBM OEM) drive to 454 and change kb's. It will format other media to respectively higher capacities. The new version is menu driven allowing you to experiment as to how many kb's you can cram into phone booth. As I have a hard disk (I wished a long time for it) I found it to be just a novelty, but it could be a real boon to floppy bound jun-iorites. It requires DOS versions in the 3's and the origi-

nal version did not format "system (bootable)" disks. The new version does that now. It's out there in BBS land.

BOOTSECT revisited - The August issue published my comments about a program which modifies the boot sector of junior's floppy disks to stop "double booting." The comments were addressed to juniors configured with SPC hard drives. Possibly, BOOTSECT would be of interest to those with other configurations. Regressing to the article, when a PCjr boots it reads, presumably from CONFIG.SYS, the "add on" hardware installed and then reboots. This takes time. BOOTSECT allows a junior to boot in one pass. BOOTSECT comes in two formats - BOOTSECT1 and BOOTSECT2 - for one and two drive systems. I assume it would be of use to other juniorites with other than SPC hard drives.

SYNECTICS - they advertise here - and sell and produce some great stuff. I believe the product of the decade award should go to their QUICKSILVER cartridge. This product hastens juniors bootup significantly. No longer do you have to watch the memory count arduously up to 640 (or whatever). Their cartridge dispenses with all that in a zip. I also recommend their internal keyboard adaptor. If they would bundle it with a NORTHGATE keyboard they would have a combo which "would kill." (sorry, borrowed from Special Agent Cooper of "TWIN PEAKS").

As usual, if you're interested, a diskette mailer addressed to you, three stamps affixed thereto and a formatted copy to me, will find it's way back to you with MAXI format, BOOTSECT, and other goodies for filler thereon.

CREDIT - BOOTSECT was written by Mike Geyer who can be contacted via the BIONIC DOG BBS in Newton, Massachusetts.

Richard Schneider,
3210 Hawthorne St, San Diego, CA 92104

Rau Responds to Call
For Lower PCjr Prices

An Open letter to all PCjr users
and suppliers to the PCjr market:

In response to a letter written by Doug Hase in the October 1990 issue of the **jr Newsletter** complaining of high prices, we at Paul Rau Consulting are responding. We have taken that challenge to reduce prices seriously and we hope that the other support companies will rally with us. We feel it is high time our favorite little computer gets the recognition it deserves. We feel that to do this, the PCjr needs to be upgraded and prove to the rest of the PC world that it is still a valuable computer.

A few examples of the new reduced prices that we offer are a 30 meg hard drive system for $419. This is a savings of $80 with an increase from 20 meg to 30 meg. Another example is the jrHotshot 512K memory card for $149.

It is no secret that the PCjr market is a much smaller market than that of the XT or AT. When specialty cards are made for the PCjr on a small scale it does drive the cost up higher. In spite of all this, we have chosen to drastically reduce our prices in hopes of selling larger volumes. Call and let us know how you feel about our decision. As always, we stand ready to service the PCjr community.

Paul Rau, Paul Rau Consulting, Galt, CA

PCjr Used for Epidemiologic Study

You people do a super job. The newsletter has really "enhanced" my jr more than some of the hardware. I am using my system (256K, one drive, proprinter) in an epidemiologic study of mortality rates in industrial communities in Virginia -- using Lotus 123 and Multiple Regression Analysis. With planning (and some patience) jr capacity has never been a problem. You should be proud of your accomplishments.

John H. Nugent, Richmond, VA

DEBUG Fixes Solve
Software Color Problem

I appreciate seeing an answer to my letter of 16 March 90 in the August issue, although it seems whoever answered it didn't really read it. Perhaps he saw only the edited version, which was a bit warped.

I didn't see how adding a MODE CO80 to a batch file could possibly affect my problem of a program coming up in color with a second side-car attached and in B&W without the second car; using the same boot disk in each case. If this were the problem, it would seem the program would be in B&W regardless of the hardware. Anyway, I tried it with no change in results. Actually, I was already using the "T3" parameter in JRCONFIG.DSK which should have been doing the same thing.

I had "solved" my problem before I got the August issue by doing a little exploring in the FriendlyWriter program with DEBUG. I'm not fluent enough in assembly language to understand completely what it was doing, or why, but I did find where it set the video mode with an Interrupt 10 (AH=00), once for the start-up menu and

again when going into "write" mode. Inserting a few NOP's and making sure that it used 03 as the value of AL makes it come up in color all the time now. So far I haven't found anything I messed up inadvertently!

Once again thanks for an answer. I imagine you are swamped by letters like mine and can't really put too much effort into individual responses, but I think you are doing a remarkable job nonetheless. Without jr Newsletter, I doubt that I would have stuck with, and enjoyed, my jr, so long and so much.

Stephen L. Thomas, Springfield, MO

Seagate Hard Drive
Needs PCjr Controller

I have the opportunity to acquire a 30 MB Seagate hard drive model ST-138 at a good price. Can this drive be used with the IBM PCjr? My jr was upgraded to 640K with a jr Hotshot which included a 3.5" disk drive controller and real time clock.

Ron Cooke, Catonsville, MD

RON - You can use the Seagate hard drive, but you'll need a controller made especially for Junior. Check with one of our advertisers for this.

Many Mice Reported
To Work Well On PCjrs

A few months ago we asked readers to tell us about their experiences with different brands of mice, those helpful little point and shoot rodents, some of whom do not like PCjrs.

Thanks to several helpful readers, we found several well known brands of mice that work very well on PCjrs. We published most of the information we received in the form of letters in the past few issues, but in case you missed them, here is a summary of our findings.
* Genius Mouse — Works only in PCjrs with the 11 inch power supplies installed.
* Microsoft Mouse — Some versions work fine. The PS/2 serial white mouse works well.
* Dexxa Mouse — Works fine.
* Kraft Mouse — Works fine.
* Qtronix Model X-30S — Needs modification, see letter in November issue.

This list includes all mice we received reports on. There are probably others that work on PCjrs, but you'll have to take your chances. Some mice require connections into both the serial port and the lightpen ports in order to receive enough power to run properly.

The ASIC BASIC Compiler

By John King

Do you write computer programs? Although most people don't need to learn how to program beyond writing batch files, it can be a fun experience. Writing a program can be a way to customize computing to your personal preferences. Of course, if it's just for fun, the programming must be easy.

BASIC is the obvious choice. Why? Because it is an easy language. You can write simple programs almost immediately, and you can also write complex applications. Every PCjr came with cassette BASIC built in, and many people bought Cartridge BASIC as well.

I like to write small programs. There is a sense of power and control when I write a program and watch my computer do what I have instructed it to do. I have Cartridge BASIC for my PCjr. Do I use it? No! Here's why.

ASIC takes easy to write BASIC programs and makes COM or EXE files

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If you use Cartridge BASIC, BASICA, or GW-BASIC your programs will run slowly. I mean really slowly. To do anything will take three to four times longer than you are used to with other programs.

This slowness is a characteristic of "interpreted" BASIC. Cartridge BASIC, BASICA, and GW-BASIC are interpreters. They must be loaded to interpret the BASIC program you have written. The interpreting process is slow, and that's strike five.

There is an alternative to "interpreted" BASIC, it's called "compiled" BASIC. Microsoft Quick Basic is a compiler. You write your program in BASIC, but the compiler generates a standard COM or EXE file. You don't have to load the compiler to run the program. It runs on it's own just like COM and EXE files, and it runs much faster.

The ASIC Compiler

All of this leads to ASIC. ASIC is a shareware BASIC compiler. It's still new, and it doesn't have the power of the other BASIC programs yet, but it can do a lot. The important point is that it is a compiler. ASIC produces COM files directly.

I'm using ASIC to write a small program to control my Panasonic KX-P1124 printer. Although the Panasonic has excellent front panel controls, some functions are awkward or available only through software. My personal printer program will make it easy to set the functions which I find most useful. There you have it, "Customized Computing through Programming". I also plan to use this program as the basis for another article on ASIC.

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

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)

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)

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)

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)

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)

JRTELE V2.1. Excellent, easy-to-use telecommunications software made especially for PCjrs, and the PCjr modem. Ideal for beginners, but has enough power and features for most users. Supports 300 and 1200 baud. PCjr internal or Hayes compatible external modems. 128K ok. (Disk #86)

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)

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)

The ASIC BASIC Compiler

The ASIC package includes the compiler, an editor, and over fifty pages of documentation on disk. Everything fits comfortably on one 360K disk with over 100K free for programs you are writing. The compiler, ASICC.EXE will compile code written in ASCII by any editor or word processor. The ASIC editor allows you to move directly from the editor to the compiler and back.

The combined editor-compiler environment requires 400K of free RAM and can compile a program of up to 809 lines. When run separately, the editor and compiler each run in 320K of free RAM. When run as a stand-alone compiler, ASICC has no line limit and can generate up to a 64K COM file. That might represent compiling over 3,000 lines of code, or more than 50 pages. Enough to handle my projects many times over.

ASIC is available from the Jr Newsletter Software Store (Disk #122). Registration is only $10 which I gladly sent to David after confirming that ASIC will do enough of what I need.

What's In ASIC

The 41 BASIC statements which the ASIC compiler handles are sufficient for many useful programs. You can control visible and audible output with commands to set colors, move the cursor or determine its position, print to the screen or printer, and control sound. In graphics mode, you can turn pixels on and off. You can obtain input from the keyboard or disk files and write to disk. Within a program you can do nested FOR/NEXT loops, IF/THEN/ELSE tests (for equal to, greater than or less than), and GOTO or GOSUB. For the more advanced there are PEEK, POKE, VARPTR, MID$, LEN, ABS, random numbers, and arrays. You can move between string (text) and integer (numerical) variables with ASC, CHR$, STR$, and VAL. String variables can be up to 80 characters, and integers can range from -32,768 to +32,767.

Most of the statements are very similar to BASICA and GW-BASIC although there are minor differences in syntax. One big difference is that ASIC is a modern version of BASIC and uses labels instead of line numbers. This is a major improvement and brings ASIC a step closer to the "power" programming languages. We'll see more of what this looks like in an example.

What's Missing

This is version 1.0 of ASIC and there is a lot in BASICA that's not here yet. Only integer (whole number) arithmetic is available. That's no problem for writing printer control programs, but you won't want to do your tax program in ASIC yet. There also are no higher math functions such as trigonometric functions and exponentials.

Although you can do a lot with the screen, there are no advanced commands such as CIRCLE, DRAW, LINE, and PAINT. If you want to do these functions, you must do them stepwise using the simpler statements.

Hard disk subdirectory commands for your programs are not yet implemented. There are no CHDIR, MKDIR, RMDIR, or FILES statements at present.

Finally, only disk file errors can be tested directly. Printer errors, such as Out of Paper, simply result in an exit to DOS.

Some of the differences between ASIC and BASICA code are striking. The use of labels (names that end in a colon), indentation, and blank lines makes the ASIC code much easier to read. For example, the GOSUB and GOTO commands specify a label as the destination. This provide an immediate idea of the purpose without REM statements.

A less obvious difference is that in ASIC INPUT cannot send out its own prompt text. A separate PRINT statement must precede INPUT if you want a prompt. This is certainly done to make compiling easier. In gen-

eral, ASIC functions are less complex than those of BA-SICA or GW-BASIC. I'm sure David will add the bells and whistles later if enough of us support him with registrations.

There are other subtle differences between ASIC and other BASICS that can cause problems until you get used to them. Note that CRSLIN is spelled differently although it does the same thing as CSRLIN. Also, the IF ROW > 20 must be followed by THEN and a label, not a command.

An easy introduction to the power of programming

Of course, what would version 1.0 of any program be without a bug or two. Although I've found none that are serious, here's one. The PRINT statement doesn't execute the carriage return and line feed quite correctly. If you ran this example, you'd find the first letter of your name missing on the last line. A simple work around until the bug is fixed is to print a space in front of the name with PRINT " ";. The semicolon stops the carriage return and just moves the name over one space where it prints perfectly.

Well, that's enough about ASIC for this newsletter. I want to spend some more time on my printer program so that I can have a version ready for next month. If any of you are using ASIC, give me a call at (415) 472-7035 and let me know what you think.

ASIC is Disk #122 in the jr Newsletter Software Store, order form on page 23.

Easy Use, Plus Maximum PCjr Power

The best way to get the most power, speed and ease of use from your PCjr is to create two or three different boot disks, one for each type of software you use.

This is because Junior needs to be told how to set up its memory, video buffer and other settings in order to work fast and flawlessly for you, its owner.

PCjr Autosetup (Disk #99) is designed to do this for you automatically. You don't have to write your own config.sys or autoexec.bat files. PCjr Autosetup will do it. This disk uses the most versatile PCjr memory management software to get the best results from your Junior.

For beginners who want to try out an integrated software package that has a word processor, database, spreadsheet and telecommunications built in, we recommend Microsoft Works, V2.0. Very east to use and plenty powerful for most of your needs. It does require a patch in order to run on PCjrs, but PCjr Autosetup installs this patch automatically for you on your boot disk, so you won't have to worry about it. Microsoft Works can be purchased for less than $100 from mail order sources. See page 23 to order PCjr Autosetup.
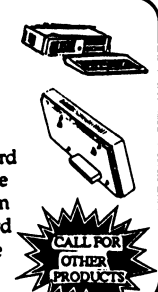
Compatibility Update

Afterburner (Sega) — Runs in 4 colors.

Crime Wave (Access) — Reportedly not compatible.

Die Hard (Activision) — Runs in 4 colors. 512K.

Flight of the Intruder (Spectrum Holobyte) — Runs in 4 colors, even with Tandy Mod.

Microsoft Works 2.0 (Microsoft) — Runs fine with jrconfig installed (See review October 1990, p. 11)

PC Globe 3.0 and PC USA (PC Globe) — Both run in 4 colors. Need 512K.

Quicken 3.0 (Intuit) — Runs fine. Need 640K.

Stickybear Numbers (Weekly Reader) — Runs in 4 colors. Need 256K. (See review in November 1990, P. 9)

The New Stickybear Talking Alphabet (Weekly Reader) — Need 640K and Tandy Mod for 16 colors. Runs in 4 colors without the mod. (See review in November 1990, p. 9)

Ultima VI (Origin) — Runs in 16 colors with Tandy Mod. Need program to turn sound on (see Disk #119 in the Software Store.)

Resume Shop Helps Job Hunters Make a Good First Impression

The Resume Shop is a shareware program designed to help computer novices and those inexperienced in writing resumes produce attractive, one-page resumes.

Resumes should be informative and concise, so the Resume Shop is limited to one page resumes. Users are encouraged to have several resumes for different types of jobs with different employers. The program also provides a sample format for a cover letter, to give users an idea of what should be included in a cover letter.

Resume Shop is a menu-driven program, making it simple to execute. The computer does most of the layout and design of the resume, so you don't need experience to make a good document. The menus let you choose which portion of the resume to work on and brings up a field editing section where you type your data. The field editor has a WYSIWYG design, so that "What You See Is What You Get." You just enter the data as you want it to appear on your resume.

When you first use the program, you will find some data already keyed into entry areas. This is included to show users the type of information which should be provided in the various sections. Users may simply type over the entry or space out what they want deleted. You can omit any menu selections or screens which do not apply. Resume Shop will work around the omissions and format your final resume accordingly.

After you have entered your data, the program gives you the opportunity to display your resume on screen before printing it. Since the screen is not long enough to display the entire document it is written to the screen in sections.

When you are ready to print the document, Resume Shop will send the text to your printer. You can select either of two types of resumes—work or educational. Students should select the education type resume because they have not acquired any significant work experience. A person who has plenty of work experience should use work type resume. Resume Shop encourages you to have multiple resumes, which can be created from scratch or based on an existing resume file. You can design different resumes for different potential employers, "targeting" a particular job by emphasizing various parts of your education and job history.

The files created by Resume Shop cannot be directly printed through another word processor because of the manner in which the program stores data and puts together the final resume. However, if you want to export your resume into a word processor, you can use the Export ASCII File option.

Since the ASCII file is a universal file format for transferring files, you can use it to export a resume to advanced word processors for special text processing, or to run it through a spell-checker as an extra precaution to eliminate typos.

If you have a plain printer and want to make a really impressive-looking resume without going to a lot of expense, use Resume Shop to design your resume and export it as an ASCII file. Then use Image-Print (Disk #50) to the final output to disk.

The Resume Shop requires DOS 2.0 or greater and at least 256K RAM. The program and data files needed to run Resume Shop are small and will fit on a single diskette. Resume Shop is disk #121 in the Software Store., order form is on page 23.

Sierra Will Produce New Games in Multiple Formats

EDITOR'S NOTE: David Bercellie received the following response to his question to Sierra On-Line, maker of **Kings Quest** and other fine computer games, regarding their continued support for PCjrs.

Many Sierra customers have expressed a desire for longer, more complex games, including more animation, more sound effects, and 356 color VGA support. In our attempt to provide these features, we have seen the need to reevaluate our format procedures.

Future Sierra games will be released in multiple formats; a 256 color VGA version will be released on high density 3.5" and 5.25" diskettes, but Sierra will continue to release each new title in a 16 color EGA version (supporting EGA, CGA and Tandy graphics) on 5.25 high density diskettes, and on 3.5" low density diskettes.

Sincerely,
John Cunney
Customer Service

**Here are David's comments
on the letter he received:**

As you can see by the letter, you will probably need a 3.5" disk drive. But I am leery about getting a 3.5" drive because my system has a Racore expansion with DMA and a lot of hardware is not compatible with my system.

In regards to **Conquests of Camelot**, when I installed the game and found out that there is no jr driver, I just copied the jr driver from another Sierra game and it runs just fine. The loading process took about a minute and forty seconds, but the game itself isn't any slower than games such as **Code Name, Ice Man** or the **Colonels' Bequest**. In fact, the Colonel's Bequest seems to run slower than Conquests of Camelot.

David Bercellie, Highland, IN

Inexpensive Motherboards

If the heart of your PCjr, the system board as IBM calls it, but more commonly known as the motherboard, fails — don't despair. You can still get them from IBM, but the last report we had was that they were charging well over $100 for them.

Another source, reported to us by Hank Kennedy, a loyal PCjr supporter and knowledgeable enthusiast, is offering the boards at a much lower price. Wallen Electronics, 210 Essex St., Whitman, MA 02382 (617) 477-0070. We called them and found they have a plentiful supply of PCjr motherboards which they are selling for $50 each. If you plan to keep your PCjr for many more years, you might want to get a back-up now.

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)

WIZQUIZ. The Wizard keeps track of your progress in solving math problems that range from elementary level through fractions and negative numbers. Extensive exercises, with scores and times recorded under each "player's" name. Compete against your personal best as you improve your skills. Grades 4 through adult. 128K ok. (Disk #95)

TYPING INSTRUCTOR. Disk contains both PC-Touch, a great typing exercise and speed testing program, and Touch Typing Tutor, a combination of lessons, including finger positions, speed tests and a typing game. 128K ok. (Disk #18)

TOMMY'S TRIVIA. Excellent trivia game with 3 ways to play against computer, 2 against human opponent. 2,500 questions in many categories, from entertainment to history. More Q's available. 16 colors on PCjr. Need 256K. (Disk #98)

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)

STUDY AIDS. Three great programs to help students. PHLASH - a computerized version of flashcards which you make and use for any subject. Multiple choice, true/false, and/or fill in blanks. FRACTIONS - a series of interactive exercises in fractions (many levels). And PHRASE - a program that picks out examples of bad writing in any document and suggests improvements. 128K ok (Disk #92)

SPELLING BEE. A game that builds spelling skills from Grade 3 level to adult. You are an Olympic athlete representing your country. Excellent color graphics. Four skill levels from very easy to very difficult words. Fun way to become a spelling champ! 256K ok (Disk #82)

SPEED READ. If you'd like to double or triple your reading speed, and increase comprehension as well, Speed Read can help you do it. It provides instruction and exercises designed to break bad habits and improve reading efficiency. 256K (Disk #90)

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)

Two Exciting "Cyberpunk" Adventures

By James Prossick

How will high tech hardware interface with old world culture in the near future? Let's take a look into two alternate views of the future, and see how man and machine work together in the Middle and the Far East.

"Circuit's Edge" by Infocom and "Neuromancer" by Interplay give the computer gamer a glimpse into two famous sci-fi authors'futuristic conceptions of how high tech clashes with eastern cultures and beliefs. Its'a new genre in the science fiction field coined Cyberpunk.

William Gibson, author of "Neuromancer" broke the ice, a pun for those who have read the book or played the game, with hackers jacking-in to the Cyberspace and doing battle with Artificial Intelligence programs (AI's) and the Samurai Mafia in Japan. George Effinger's "When Gravity Fails" reveals a grittier future in the Middle East where wild sex, designer drugs, and moddies and daddies, quick change personality and neuro system cartridges, mix well with murder.

Both are action oriented role playing games that run well on junior with only a few minor inconveniences. Your machine will need a minimum of 640k, dual 5 1/4 drives, and the Tandy Mod if you want 16 colors. There is limited sound on both games, with no access to the musical score on Circuit's Edge, and a sound track that functions and malfunctions on Neuromancer. Neither game has on-disk copy protection, and with their setup menus it's easy to configure the programs properly for play on your system.

"There's a wide variety of off-the-wall humor."

First let's look at Circuit's Edge where we find Sam Spade in Arab garb seeking to straighten out the twists of an often twisted series of murders. This is a good example of Infocom's successful transition from text-only to graphics oriented games. It puts the gamer in the point of view position behind the bullet-proof gargoyle shades of the main character, Marid Audran. Seeing through his eyes, you move through the Muslim sin city of the Budayeen following a trail of murders to the mystery's end. Moving around town is a breeze once you get your directions straight. The compass bearings are given on screen as you move.

There is no joystick allowed, and if you want the visually appealing 16 color Tandy palette then forget using a mouse. Why? Go ask Allah. Anyway the cursor keys function fine. I would suggest using the absolute setting for less frustration, because the relative setting changes direction dependent on your current position. In other words, with the relative setting on, up is not always up and left can be right. Not quite as confusing as Middle East politics, but it takes some getting used to. Getting your bearings is much simpler. This game has an easy to read map you can bring up on screen and compare to the map and addresses contained in the manual's Budayeen phone directory. This puts new meaning into MAhammed Bell's "Let your fingers do the walking", and does away with that pesky graph paper and pencil required by so many role playing games.

Don't Kill The Just Citizen!

"Where you at?" is the Budayeen greeting and explains this free wheeling game best. You can go where you please and do as you will. Following the trail of clues leads you to the end of the mystery, but following the side roads can be just as fun. Fast cash can be picked up at the gambling den or you can thrash street punks to death. All sins are forgiven here, as long as you face

Mecca on your knees three times a day. That is unless you kill the just citizen along with the street varmints. Unprovoked murder will put you in the slammer and end the game.

Lots of murder and sex earn Circuit's Edge an R rating

Needless to say, this is not a family game and deserves an R rating for its violence and sexuality. That's not a put down, because I enjoyed the game play tremendously. The gruesome murder scenes Marid keeps stumbling onto are depicted more by words than visuals, but there are enough graphics to do the trick.

Be A Sheik Sherlock

The game interface is a multiple window onto Marid's world. About a quarter of the screen is devoted to the action taking place, and is always from Marid's point of view. The left hand corner of the screen shows a picture of your character or the character you're speaking to, with the bottom screen section dedicated to text. Before you can interact with a character, outside of fighting, you have to be talking to them. Then you can buy, sell, and show items from your inventory. You move around the menus at the top of the screen to talk, take action, or use the game options. You can talk to characters with canned sentences or ask about specific subjects. Asking the right person the right question is a good way to move the mystery ahead, but any sheik sherlock knows that.

Chipping in the right moddy and daddy makes Marid the man he needs to be for the task at hand. The Thrasher and Kung Fu moddies change your personality into a street fighting machine, while certain daddies give you the necessary skills to unravel those clues. This is great fun. Imagine controlled schizophrenia and you get the idea of what flip flopping personalities can be like. The suave Secret Agent, the psychopathic Thrasher, and the zen control of the Kung Fu Master all have their part to play in this game.

It's also quite handy to zap in a skill like computer hacking or speaking a foreign language to move the mystery forward. You've got four chip slots with room for one moddy and three daddies. Remember to walk the streets prepared, since you can't chip-in once a fight has begun. Remembering is actually a great gift Marid has to bestow on you as the gamer. The game options allows for the recall of past events, except those facts you turn up on the Police station terminal. This is a great feature that combined with the on-screen map take the drudge work out of role playing. Game saving is not so advanced. You're allowed only one save and you have to do it at home in your apartment, so don't forget your address.

Summary Evaluation

All in all, Circuits Edge is a well crafted role playing game of medium difficulty with a good stable of well defined characters, and a gritty feel that gets under a gamer's skin and gives you an itch to play. This game comes close to realizing the ideal of a self contained computer role playing game, with its on-screen map and main character recall function. The manual adds to the completeness of the package by including a fine introduction, a glossary of terms, a bio of the cast of characters, a hard copy duplicate of the Budayeen map, a phone directory, and some hints to get you going.

"The battles are both stimulating and entertaining."

Edge has very good graphics, wonderful color selection in the Tandy sweet sixteen, and does a good job of putting the player in the action, even with the limited window dressing of the point of view graphics mode. The game operation is as smooth as the dance of the seven veils, with surprisingly quick screen transitions.

Although the parser is not up to snuff with some of Infocom's past text only efforts, it does a decent job with a minimum of repetition and ridiculous answers. The words make this story, and the words and the graphics jive well in this game. It's bloody fun for all you Moddies and Daddies.

Humorous "Neuromancer"

Interplay's Neuromancer has been on the software shelves for a couple years, but in no way takes a back seat in graphic or game appeal. You can configure the program for the Tandy, and even though the color selection is more subdued than most, it fits nicely with the cool atmosphere of the game. Your character can move by either mouse, joystick or cursor keys. The main screen gives you a full size view of your character in action and two series of windows to control the game. One to keep you up on the time, cash flow and your health. Another to speak, access your ROM Construct, link-up with the PAX terminal, use items in your inventory and special skills, and perform game mechanics. The game works quite well on junior, and the interface is easy to use with either keyboard or pointing device.

Unfortunately, Devo's high energy sound track does not work so well. Neuromancer was devised with more speed in mind than Junior's stock 8088 can deliver, and the music tends to drag with the constant disk access time and can lead to a crash landing. So I've taken to

Get Super Sound

(Continued from page 1)

tial for creating better sound with Junior than from most computers. To see how the speaker you are using with your PCjr handles sound within a range of frequencies, you should try out the short BASIC program shown in Listing 1. If you haven't used BASIC in a while and have forgotten how it works but you don't want to dig out your manuals, then read the companion article "The Basics of BASIC" for enough information to try out the programs in this article.

Use BASIC To Test Sound

This program is mostly self explanatory, and it will work with any version of BASIC, even the BASIC that is built into Junior's ROM. It uses BASIC's SOUND statement to make the beeps. The SOUND statement is followed by two numbers. The first number is the frequency of the sound, and the second number is the duration of the sound. BASIC allows the frequency to be any number in the range 37 to 32767, although any frequency below 110 Hz will sound at 110 Hz. Duration can be any number between .0015 and 65535. A duration value of 18 will make the sound last about one second. In this program we try out one-half second beeps at frequencies from 200 to 3000 Hz in steps of 100 Hz. The program prints out the frequency as the beep is made. A variable, which we named F, to represents the frequency value, and a FOR-NEXT loop is used to increment the frequency. A peculiarity of the SOUND statement is that the program continues to run as the sound is being made and it does so without waiting for the sound to be completed. In our program we have an empty loop, in line 60, to delay the program while the sound is being made - without that delay the program would almost instantly print out the frequency values, and the beeps would follow.

As the program is written, the sound comes from the built-in computer speaker as well as from the computer display or from an external speaker plugged into Junior's audio port. If you want to turn off the built-in speaker, and you are using Cartridge BASIC, add a line 15 which contains the command SOUND ON. This command causes the sound to be made by the TI Complex Sound Generator, but you probably won't really notice any difference other than the built-in speaker has been by-passed.

You will want to change the frequency range, the frequency increment and the duration of the beeps in this program in order to test out the speaker you are using with your computer and learn what your practical frequency limits are. You will probably notice that, some frequencies, especially the higher ones, sound louder than others. This is because of secondary vibrations within the speaker and its enclosure. The better quality speaker you

are using, the less this will occur.

LISTING 1

```
10  CLS
20  PRINT "FREQUENCY"
30  FOR F=200 TO 3000 STEP 100
40  PRINT F
50  SOUND F,9
60  FOR K=1 TO 500: NEXT K
70  NEXT F
```

Keyboard Music Maker

With just a little more work you can use the SOUND statement to turn your computer into a keyboard musical instrument. A musical note is nothing more than a short sound at a certain frequency. The middle C note, for instance, has a frequency of 523 Hz (To be precise, it has a frequency of 523.25 Hz, but we will round all of our frequency and duration values to the nearest whole number.). We can make a short program in which whenever a certain key is pressed, a sound of a certain frequency - a musical note - is generated with the SOUND statement. Each key will cause a different note to sound.

Before we write such a program, we need to learn the rudiments of music notation. In music there are seven basic notes, usually called the natural notes, which are designated by the letters A through G. For some reason, unknown to me, the order of the notes always starts at C - thus, the notes are usually shown as: C D E F G A B. In addition to these seven natural notes, there are five in-between notes. There is a note between C and D, between D and E, between F and G, between G and A, and between A and B. On a piano the natural notes are the white keys and the in-between notes are the black keys. These in-between notes are the sharps and flats. Since they aren't used often in elementary music we won't say
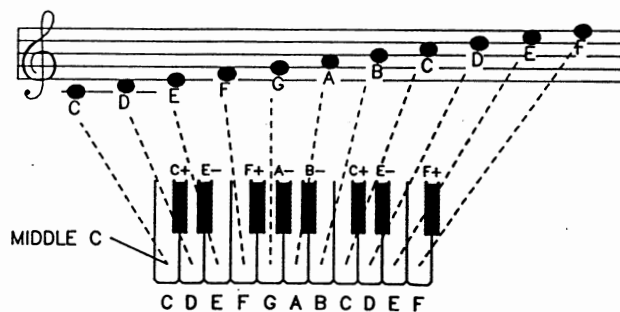
RELATIONSHIP OF WRITTEN
MUSIC NOTES TO A KEYBOARD

FIGURE 1

much more about them at this time. This series of eight natural notes is called an octave. Music normally ranges over several octaves, with the actual range determined by the capabilities of the singer or musical instrument. On a piano, for example, there is not just one C note, but about seven of them in seven different octaves and each C note has a frequency that is different from the others. Sometimes these octaves are given names - the octave starting with the center key on the piano is usually called the middle octave, the octave to its right is the treble octave and the octave to its left is the bass octave.

Figure 1 shows the relationship between written music and the notes and the keys on a keyboard. Music is written on a staff of five lines and four spaces. Each note is assigned to a specific line or to a specific space on the staff. The middle octave B note, for example, is always on the center line. Figure 1 shows the notes on the "treble clef". Music also has a "bass clef" to cover the lower notes, but most tunes are in the treble clef range.

On the computer keyboard instrument we will make, we will use the eleven keys on the row starting with the letter A on the left and ending with the single quote key on the right. We will just use the natural notes, no sharps and flats, although you can easily add them later by using the row of keys starting with the letter Q. We'll assign frequencies to the keys which correspond with the treble clef (see Figure 1) which means that we will cover the middle octave and part of the treble octave. That is, we'll start with middle C (Which will be the a key.) and end with treble F (Which will be the ' key.). Table 1 shows the frequency of each of the eleven natural notes that we will use. This table also shows the frequencies of the sharps and flats within this range in case you want to add them to your program.

looks at the contents of M$ and makes a sound with an appropriate frequency. If, for instance, M$ is an "a", then the SOUND statement with a frequency value corresponding to the middle C note is invoked. Or, if it's a "s", then the SOUND statement is invoked using a frequency value corresponding to the middle D note. The program runs in an endless loop until the "q" key is pressed to end the program. You must make certain that you don't have the Caps Lock toggled on, because the program won't work and it won't quit either. This is a no-frills program, without any error trapping, but you can add as much to this basic framework as you desire. As it is written, this program will work with any of the versions of BASIC. If you are using Cartridge BASIC and want to use only the speaker in you color display or the speaker you have connected to the audio jack, then add a line 15 which contains the command SOUND ON.

LISTING 2

```
10  CLS
20  N$=INKEY$
30  IF N$="a" THEN SOUND 523,5
40  IF N$="s" THEN SOUND 587,5
50  IF N$="d" THEN SOUND 659,5
60  IF N$="f" THEN SOUND 698,5
70  IF N$="g" THEN SOUND 784,5
80  IF N$="h" THEN SOUND 880,5
90  IF N$="j" THEN SOUND 988,5
100 IF N$="k" THEN SOUND 1046,5
110 IF N$="l" THEN SOUND 1175,5
120 IF N$=";" THEN SOUND 1319,5
130 IF N$="'" THEN SOUND 1397,5
150 IF N$="q" THEN END
160 GOTO 20
```

Table 1

Note	Frequency (Hz)	Note	Frequency (Hz)
F#	1480	G#	831
F	1397	G	784
E	1319	F#	740
D#	1245	F	698
D	1175	E	659
C#	1109	D#	622
C	1046	D	587
B	988	C#	554
A#	932	C	523
A	880		

The program that will turn your PCjr into a keyboard instrument is shown in Listing 2. There really isn't much to it. It uses BASIC's INKEY$ variable to read a character from the keyboard and it assigns that character to a string variable that we named M$. Then the program

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)

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)

PC-CHESS. Two great chess games on one disk! A full-color, many featured chess program with four levels of play, allows such things as switching sides, setting up the board yourself, validity checking, en passant, etc. The other works on color or monochrome, has window showing options it considers before moving, adjustable difficulty level — but a powerful opponent at any level. 128K ok for one, 256K for other. (Disk #44)

MEAN 18 GOLF COURSES. Three excellently designed courses for those who play "Mean 18," the commercial golf game. Disk #79 has Boca Woods North, Boca Woods South, both with especially challenging water holes, and Kearsage Valley, with fall foliage in full color. Disk #80 has TPC of Avenel, TPC of Sawgrass, with massive sand traps and a tough 17th green on an island, and TPC of Woodlands, which may be the most challenging of all. (Disk #79 and #80)

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)

GAMES III. Kingdom of Kroz, an award-winning arcade action game. Go-Moku, a challenging Japanese strategy game, also known as Pente. Zigsaw, the first really good on screen simulation of a jigsaw puzzle. All three on one disk. 256K Reviewed 12/89 (Disk #101)

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

GAMES I. 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)

Get Super Sound

(Continued from page 17)

To give you something with which to try out your program, Figure 2 is the music of a well known tune. We won't tell you what it is now, but you will have no trouble in recognizing it when you play it on your PCjr keyboard instrument. The music in Figure 2 has some notation, related mostly with note duration and timing, that we haven't explained, but it will not affect your ability to play the tune. I really do not know much about music, and I had trouble translating the written music notes into finger action, so I made a list of the computer keys to be pressed in their proper order to play the tune in Figure 2. For anyone else who also needs this help, the keys to press, in order (If you have written the program as shown in Figure 2.) is:

ggh fgh jjk jhg hgf g lll lkj kkk kjh jkjhg jkl ;kjh g

This keyboard music program is a lot of fun to play around with, but it doesn't do anything that you couldn't do on most other PC's. In our next article we will take a close look at the Texas Instruments Complex Sound Generator and then we will begin to take advantage of Junior's advanced sound capabilities.

A PRACTICE TUNE

FIGURE 2

What Is A File Manager?

A File Manager is a very handy type of software for copying, moving, deleting, renaming and doing other useful things to files without having to use DOS commands. Scout, Disk #81 in the jr Newsletter Software Store, is one of the best we know of. It can be "memory resident," which means it'll pop up any time you need it by just pressing two keys.

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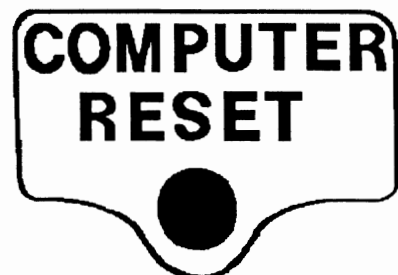
COMPUTER RESET

Cyberpunk Adventures,

turning off the tunes after I boot-up.

This game has a humorous perspective on life and an intriguing three dimensional world to explore. There is the real world of Chiba City, the informational world of the Databases, and the alternate reality of the AI's in Cyberspace.

Man Eats His Own Head

Let's start with our feet firmly planted on the ground and our face nose down in a plate of pasta in Chatsubo's restaurant. Even when you read the Night City News on the PAX and find that Sal Manila made the clam sauce your wearing, it's still best not to eat and run. The lawbots love to nab the criminal element and subject them to humiliation in front of big screen Judge Wopner and the crooked defense attorney. Each trip to the hallowed screens of justice puts a big bite on your credit chip that can literally cost you an arm and a leg at the body shop later on.

Although headlines like "Man Eats His Own Head" are bound to grab your attention, the Night City News is more than just a grocery check-out-line read. There are facts in there that can help you in your quest to solve the murders of your cowboy friends in Cyberspace. In addition to an automated newspaper, the PAX is also an ATM, an electronic mail drop, and copy protection scheme all in one. Each time you use the PAX you become a wheel watcher and must line up the three code words to get the proper access number to make the connection. It slows the action down a bit, but I'll take it over on-disk protection any day. Once you're on the PAX make sure you check the bulletin board. The messages there will point you in the right direction and help you make the right connections. Don't be afraid to ask a question or two, you might get the answer you are looking for.

Neuromancer is a more traditional role playing game set in the future. It's a complex game with plenty of puzzles to solve, so plan to invest a fair amount of time to reach the conclusion. There is a wide variety of off the wall humor embedded in this game, so take the time to check out the esoteric information. You're sure to get plenty of good laughs. This is a top flight role playing game that refines the art of informational gathering to its utmost. As you're lead along each level's linear path you'll think you're exercising freedom of choice, until you run into a roadblock at the next level and have to backtrack for this missing clue. The story is spun that well and the gathering process that stimulating and that much fun.

So how's she run boys? A little slow. A bit too much disk access time and a wee too quiet without he sound effects or Devo's music score. But if you turn off the

sound it's a smooth ride with no crashes. The interface is a pleasure to use with any device. I found the keyboard the quickest and easiest once you got the speed keys down. The cool color palette has the 16 Tandy hues and matches the ambience and feel of the game nicely. There is also a classy manual that gives you a good introduction, a partial inventory of skill chips, and some basic operational information and combat strategy.

Beginners Corner

(%%%) will keep track of your *year-to-date* expenses by totalling cells N3 through N7.

Now whenever you change a number anywhere on the spreadsheet the appropriate formula cells will automatically recalculate the new totals. If you take time and study this scheme you'll then have a very basic understanding of what a spreadsheet is and how it works. It's the handiest program I've ever used and it's really very simple.

There are several spreadsheet programs to choose from. Many of them come with a learning tutor.

Using the TYPE Command
To Read Text in Files

A fast, easy way to bring the contents of any file up on your screen is to use the DOS TYPE command. This command comes in handy when you want to read text from a file on a word processing program disk or a disk containing file extensions such as .DOC or .TXT which are unfamiliar to you. If you enter TYPE (filename and extension) you will see on your screen the words contained in the file. They will move upward at a rate faster than most people can read, so you will have to use the Fn S key to stop the upward scrolling. If the file does not contain text, you will see DOS trying to type data bytes matched with junior's extended character set. If strange symbols appear on your screen after you have entered the TYPE command, you will know the file is not a text file.

Use of the TYPE command comes in handy when first reviewing some public domain or user supported programs. Files such as READ.ME or MANUAL.DOC can be read to give you the information you will need to understand the program.

The TYPE command is also useful for reviewing the contents of text files you have stored on disks when the directory names for those files are not sufficiently descriptive to you what is in that file.

Many people confuse the TYPE command with various printing commands — probably because the word TYPE suggests that it will cause your printer to do just that. But it won't. If you want to print out a text file with a DOS command, try COPY (filename) PRN. This will cause DOS to "copy" the file to the printer. Or you can press the Fn Echo combination before entering the TYPE command. This will cause DOS to bring the words up on the screen as they are being sent to your printer.

Do You Know What the Bible Says?

One way to boost you knowledge of what the Bible says is to use Bible Quiz, Disk #85 in the jr Newsletter Software Store. It tests your knowledge of both the Old and New Testaments, and provides the answers when you can't come up with them yourself.

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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PCJR COMPATIBILITY DISK V3.5. Lists hundreds of software titles, along with info on how they run (or don't run) on PCjrs. Includes many tips on how to make software PCjr compatible. Powerful search feature finds titles quickly and easily. 128k ok. Updated April, 1990. (Disk #60)

PCjr PATCHES V.5.0 Patches to fix software that ordinarily won't run on PCjrs. V.5.0 adds patches for Prodigy, Telix V.3x, Bard's Tale II, Maniac Mansion, Designasaurus, California Games, and F-19. Also patches for Flight Simulator V.3.0, Arctic Fox, Managing Your Money V.3, Autocad, King's Quest IV (early 512K version), KQ II (PC ver), Turbo C, Quick BASIC V3-4, Advanced Flight Trainer, Double DOS, Bard's Tale I, Turbo BASIC, and BASICA. (Disk #56)

jr Newsletter Software Store

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 hundred 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:
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Art & Drawing, Music & Speech, Just for Jr. - 9
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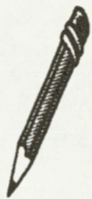
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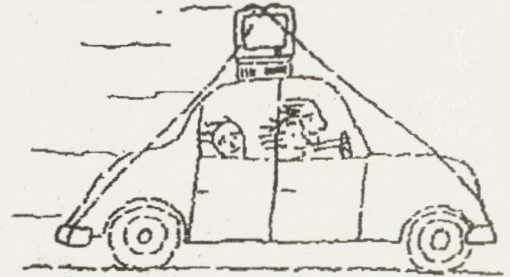Name _____

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