

Jr Newsletter

April, 1991

How To Understand and Use The PCjr Sound System

(Part 5 in a Series)

By John E. Wilson

In the previous articles of this series covering the sound and music capabilities of the PCjr we used the BASIC programming language to experiment with sounds and music. In fact, in our last article in the February issue, the program that we developed would work only with IBM Cartridge BASIC because that is the only high level computer language that directly supports Junior's sophisticated sound capabilities.

There are at least two disadvantages to using BASIC. First, you must have the BASIC program. Of course everyone has ROM BASIC, since that, rather primitive, version of BASIC is built into every PCjr; and everyone should have BASICA, since it comes with PC-DOS; but there are probably some PCjr owners who don't have Cartridge BASIC.

A second disadvantage to using BASIC is that you must be "within" BASIC to run a BASIC program. The versions of BASIC that we have been using are all interpreted versions of the language, which means that you must first fire-up the BASIC program, and then the BASIC program translates your program one step at a time and sends it to the computer. You cannot compile your program into a stand-alone program that runs by itself.

Beginning with this article we will leave BASIC behind us and start to create musical programs that will stand



alone. We will learn enough to make just about any sound that the PCjr is capable of. The first program that we will end up with will only make three musical notes, but the principles that we will use can be expanded to make sounds in a program of just about any level of size and complexity that you desire.

In the PCjr, as in other PC type computers, the steps in programming sounds are different from most other operations. IBM set up in both the computer's Read Only Memory (ROM) and in the operating system (DOS) a set of services for programmers to use for almost every operation except sound generation. These services (there are books written about them) help programmers print messages on the screen, get input from the keyboard and save data on a disk drive, but there are no services that will make even a simple "beep". To program sound on the PCjr, and every other computer in the PC family, you must go directly to the hardware. This makes programming sound and music somewhat complicated, but it also makes it challenging and interesting.

Most high level programming languages, such as C, Pascal and Quick Basic, do have functions for generating sound and music, but at their heart these functions must resort to the same low level hardware manipulation tricks

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PCjr Lives!

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Beginner's Corner

Adding A Second Drive Makes Computing A Lot Easier

Different people have different levels of ability and patience. But, for most people our advice would be not to rule out installing a second disk drive yourself unless you are the type of person who couldn't or wouldn't want to learn how to change the oil in your car or change the battery in your smoke alarm.

Many of the second drive kits available now are just about that simple. They require taking the top off your jr, plugging in some cables and an adapter card, putting the drive unit in place on top of your initial drive (if the unit is a so-called "internal second drive" with an enclosure that matches the design of the PCjr's casing), and copying some files to your DOS disk so that your jr will recognize the second drive.

Most makers of second drives for the PCjr supply you with step-by-step instructions which are quite easy (even for the non-technical person) to follow. If you already have

added memory to your jr you will have to ask your supplier whether the second drive will interface with it, but that should not be a problem. If you have an internal modem, you may have to get a special adapter, since most second drive controller cards plug into the PCjr's internal modem slot. When selecting your new drive, you might want to consider a "direct drive", rather than a belt driven drive, since direct drives are quieter. It really is easy to add a second drive.

No tools, other than a wide blade screwdriver used to pop up jr's top cover are needed. And think of the amount of disk swapping you will save yourself by adding a second drive.

3.5 Inch Drive

A smart alternative to a 5 1/4 inch drive for your second drive is to add a 3.5 inch drive. These smaller in physical size, but larger in storage capacity disks are fast becoming more popular than the older floppies. Your PCjr is perfectly capable of handling either type of drive and the added storage a 3.5 inch drive provides can come in very handy. As for cost, the 3.5 inch drive complete with controller for your jr will run about \$200, while a 5 1/4 inch drive will be about \$30 less. Most of the advertisers in our newsletter carry both types of drives and can provide PCjr specific installation instructions as well.

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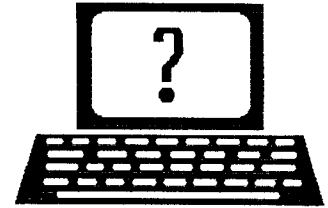
Alternatively the command can be in a .BAT file with a name such as FF.BAT. Then you can merely type FF <Enter> and the same thing happens. Why not do some experimenting, and find the other "magical" keys for printer control, or the beep, or anything else?

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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. I have made what I believe is the jr-to-Tandy video modification on my 640k PC jr. How can I tell if I did it correctly? Everything still seems to function exactly as before. Can you tell me of a program to test this modification?

R. C. Chilton, Bedford NH

A. Perhaps you've done the most exacting test already... You see, there will be NO change with any programs, including Cartridge BASIC, which ran properly before the modification. If you really want to test the video of the changed jr., get thee to a Radio Shack and pick up an inexpensive 16-color graphics program for the Tandy 1000. If it runs in 16 color mode, you're all set. Be sure to reserve maximum video memory in your CONFIG.SYS file for these graphics programs. If you want to spend more money for another test (\$38.00 to \$45.00) and you have a hard disk, get Microsoft Flight Simulator version 4.0 and when the setup screen asks for the kind of graphics you have, choose "Tandy 1000 16 color..." This will do what the software driver patch does for Flight Simulator version 3.0.

This reader was also kind enough to tell us that the latest Carmen/USA would not run on his jr so he telephoned Broderbund and they will exchange this 2-disk version for the prev. 1-disk version which (they say) does run on the jr.

Q. First, I have two clocks (Racore and Impulse) and neither will set up when booting. I have tried removing the batteries one at a time but nothing seems to work. Have you any ideas?

Second, I use DOS 2.1 most of the time, but found that Sierra games need DOS 3.0 to operate properly. I have DOS 3.3 but rarely use it. My problem

is that when booting, flashing colors, characters and boxes appear on-screen. Is there a patch or something to take care of this problem?

B. Tragni, San Jose CA

A. You should probably locate and remove one of the clocks and its associated battery. This should be an easily identified, well labelled, single chip in a socket. Dig up the original software and turn on and set the time for the clock still installed. Now set up your boot disk to read the time and you should be OK. Try the same thing for the other clock chip and its software if this first try gives a problem. Be sure the batteries really are OK before doing any of this.

Our suggestion is that PC DOS 3.3 should be the standard for anyone with 384k or more of memory. This version is totally compatible with the jr. and with Sierra products. If you are experiencing some booting aberrations it will be because the hardware is acting up or you have device drivers in the CONFIG.SYS file which need to be the correct ones for this later version of DOS. You CANNOT mix device drivers, command.com or any external commands among the DOS versions! To check this out: boot with DOS 3.3 then put in a DOS 2.1 disk and type format or mode etc. Sometimes TSRs will cause problems at boot up, too. There is very little reason for loading TSRs at boot-up time nowadays anyway, since the shareware program IBMFLMK (a marker and remover) is available to do the following: Mark, install the TSR, use the TSR, then FLUSH the TSR entirely out of memory. All this can be done at ANY time from DOS or in a BATch file and is especially handy after boot-up. It works perfectly with PC DOS 3.3.

Keep up the good work for the SIG with the BBS in the San Jose & Bay area.

Q. Are the 360k disk drive units in PC clones interchangeable with those in the jr?

P. F. Metzger, Jonesboro GA

A. Yes, they are electronically ideal as replacements for the jr. The physical problems, where there are any, are really minor.

1) The face plate of the mounted drive in the jr is recessed and appears a bit smaller from top to bottom than the standard PC or clone. The door handle (lever) on some drives strikes the top edge of the opening in the jr's case. Just file a little semi-round relief in the grey plastic opening and you're all set.

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Questions and Answers

(Continued from page 3)

2) The flat ribbon push-on connector SHOULD be on the RIGHT rear of the drive for the easiest replacement because the fan housing is at the LEFT rear of the jr's mounting bracket. In most cases just push on the connector BEFORE mounting the drive into the grey cradle and carefully route the flat cable away from any sharp edges. The smaller DC Power cable and plug is normally not a problem, but look it over.

This reader also reminds us that we still need information on the cluster network system for the jr. Anyone have it up and running?

Q. Can you elaborate on the connections to a TTL monitor?

R. C. Chilton, Bedford NH and a number of others...

A. Again: TTL only means Transistor-Transistor-Logic and at an agreed upon voltage level. If you are using a monitor, TTL or otherwise, which has a "composite" input then there will NOT be three separate color inputs at its cable. In that case the Connector for Television pin-out is:

- A1) → +12v
- A2) → Key
- A3) → Composite Video
- B1) → Ground
- B2) → Audio
- B3) → Shield (GND)

The Color/Graphics Jack connector for direct drive is:

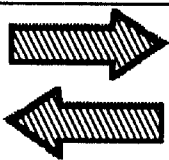
- #1 → Composite Video
- #2 → Chassis Ground

In this case a separate audio connection is made at the "A" RCA phono jack on the rear of the jr. (1 volt P-P)

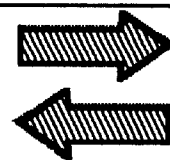
The standard (separate RGBI) connector is:

- A1 → -vert sync
- A2 → logic gnd
- A3 → -horiz. sync
- A4 → blu
- A5 → red
- A6 → intensity
- A7 → green
- A8 → composite sync
- A9 → audio
- B1 → +vert sync
- B2 → logic gnd
- B3 → +horiz. sync
- B4 → reserved
- B5 → logic gnd
- B6 → reserved
- B7 → reserved
- B8 → reserved
- B9 → shield gnd

You should carefully read pages 2-82 and 2-83 of the PC-JR Technical Ref Manual for this information.



Reader Feedback



A Plea to Classified Ad Responders

I am forced to resubmit my ad for the next issue of Jr. Newsletter as I did not sell on the first one, in January. I hope this makes it in time for the March issue. I think that you might mention somewhere in your newsletter that persons responding to ads should, if they decide they aren't interested, let the ad runner know this so that he may sell to another. I had two bad experiences in one ad. The first said he wanted it but did not call back as he assured me he would. When I called, he said, "Oh, I'm sorry, I changed my mind."

The second one said he wanted it and to give him the final figure including shipping and a money order would be forthcoming. I did this and gave his wife the amount with assurance that the money would be on its way, and after ten days, NO MONEY! I called and once again, "Oh, I changed my mind, didn't I call you?"

In the meantime, I told two other calls that the computer was sold. Needless to say, I was angry and still am.

Jack Goetz, Houston, TX

Second Hard Drive, Modem And INT9 Fix Tips

If you have a PCjr, then you know that it can be both frustrating and gratifying at the same time, especially when you accomplish something on your jr that everyone else said couldn't be done. I have worked through a number of problems on my jr. I would like to share three of them with you. Maybe they will help. Just a note on my system configuration. My jr includes a 512K IBM sidecar for a total of 640k, a jr. excellerator running at 9.54 mhz, a 30 meg and a 20 meg RIM SCSI hard drive, a 3.5" drive, a 101 keyboard, a 2400 baud external modem, a serial mouse (I use a switch box for modem and mouse), and an IBM Quietwriter II printer.

The first area regards adding a 2nd hard drive. The RIM SCSI system will allow you to add another hard drive. To do this simply involves adding another SCSI connector on the cable in the appropriate location for drive placement, and making sure your power supply is sufficient to handle a 2nd drive. Before installing the drive in the case, your first hard drive or "C" drive must have a small modification done to it. You must remove three small Termination Resistor Packs that are on the underside of the drive. These are about 1" long and are simply

plugged into the board. Gently pull these out. Next you must place a jumper on the new "D" drive on the jumper select pins for drive 1. Install the drive in the case, plug in the 50 pin connector, plug in the power connector and you're ready to go.

Now you're ready to format the new drive with the FMAT4JR program supplied with your controller. Make sure that when you select to format, that you select drive "1" and that the drive "1" or "D" drive lights up. If it doesn't or if both lights light up, abandon the program and re-evaluate your hardware configuration. If you have the device driver SCSI4JR in the config.sys, then that's all you need to do. I will be placing a more detailed document on several of the bulletin boards under the name SCSI.ZIP.

The second area regards the use of an external modem. I had a BSM Quickkomm 2400 baud external modem. It seemed to work fine on Procomm Plus, but when I would try to use PC Anywhere or the communication part of Quicken 4.0 for Checkfree transmissions, I could not seem to get the modem initialized. I tried the modem on XT and AT computers with no problems. I attributed the problem to the program making a DMA call since the jr doesn't have DMA. I finally contacted Computer Reset in Dallas and found out that there are, in fact, some modems that simply don't work on the jr. I purchased one from them (a PC Partner 2400 mini) and discovered that both of the programs that wouldn't work before, now worked flawlessly. If you're having problems with your modem, it may simply be incompatible. Other modems that they have tested include the Premier, the Logicode, the Hundai, and the Packard Bell. I'm sure there are others. A compatibility list needs to be developed. Also another suggestion would be to use the COMSWAP program if you're using an external modem.

The third area is related to the problems of the Interrupt 9. Since the jr doesn't have INT 9 there are a number of programs that won't run. Several months ago I read of someone having trouble with DBASE IV not running. By using a correction to the INT 9 the program will run without any problems. Several ways of doing this are by using the Quicksilver cartridge or the JRCONFIG program. There are other programs as well that will solve this problem. Correcting this is well worth it because there are a number of high end programs that require it and will run perfectly well on the jr if it is corrected. (The INT 9 fix is also on our Disk #56 PCJR PATCHES —ED.)

(Continued on page 6)



Reader Feedback

(Continued from page 5)

If you have any questions, call me at 214-709-6957 and I'll do what I can do to help.

Steven D. Coffman, DeSoto, TX

Some Recommendations, And Some Cautions

My opening paragraphs are in response to recent questions that have been raised in your newsletter.

One reader was searching for a combination printer **cable-switch box**. A mail order company called Inmac sells such a switch for \$49 plus shipping and handling (\$43 each for 2 - 5). Their phone number is 1-800-547-5444, and they have a lot of items that can work with almost any type of computer (blank disks, cables, furniture, etc.).

Another reader was inquiring about using **QuickBASIC** with the extended jr graphics and sound. I have risked some money on a shareware package called **Grafx** which does exactly that on a Tandy 1000. The routines do not run properly on my PCjr (I don't have the Tandy modification, but I don't think that would solve all the problems). There is a lot of source code and other information in this package that might be of interest to an advanced programmer.

I ordered Grafx through the Software Shopper. Their phone number is 1-800-847-0309.

I close with a good news-bad news story. I recently purchased an external disk drive called **Backpack** from MicroSolutions. This disk drive connects to my parallel port (Tecmar jr Captain), uses 3-1/2 inch disks, and writes as much as 2.8 mb on one disk. Also available are 1.4 mb 3-1/2 inch and 5 1/4 inch 360k or 1.2 mb versions for less money. Although not shown in the ads, power comes from an included external transformer. Backpack will co-exist with my RAM disk, and does not replace the phantom B: drive as some internal 3-1/2 inch drives will do.

The bad news? Well, the standard PCjr beeps if you try to type while the disk is reading or writing. With the Backpack, the jr silently crashes instead. Apparently there is some kind of interrupt conflict in the device drive. It also crashes frequently when running QuickBASIC version 4.5 (works much better with version 4.0). This habit makes the Backpack most useful for transferring files, but even that holds some risk unless one is very faithful in backing up his files to another drive (a "worst case" crash could scramble your File Allocation Table). Also be advised that blank 2.8 mb disks cost \$10, are hard to find, and are not very compatible with anyone else. This is not too big a problem because I can also read and write 720K or 1.4

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)

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)

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)

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)

PLAYER'S CHOICE. Six different card games, some easy, some hard, but all excellent. Youngsters can have fun playing Memory or Even-Out, which are quite easy to master. Blackjack is hard to beat, and Poker, which has the ability to modify its play in response to your methods, is a real challenge. Also two fine versions of Solitaire, one with great graphics. Some need 256K. (Disk #78)

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

SCRABBLE. At last, an excellent Scrabble game that runs in 16 colors on PCjr's! Plays just like the board game. Expandable dictionary checks words. Keeps track of all premium score squares and scores for up to four players. Also contains WORDWHIZ, a nice vocabulary building game. 256K (Reviewed 5/90) (Disk #113)

STAY ALIVE !!! Three games that require all your wits to stay alive. Can you avoid the terrible nightmares and reach the highest level in Dr. Sleep? Or fight off the alien hordes on the Planet Iskib? Bet you can't shoot down the clever enemy pilots in Sopwith. If you can, you deserve a medal! 256K (Disk #89)

(More Games on page 7)

mb on lower cost disks.

Tecmar owners note: if you are still using CONPCJR, you may have to leave Backpack turned off when powering up the computer. Turn the switch on when you see the reminder message.

If there are any Tandy 1000 owners out there eavesdropping, tread lightly. Your card-edge printer port will not connect to Backpack and one signal line is apparently missing. MicroSolutions suggests that Tandy owners buy an LPT2 card.

I would hesitate to recommend Backpack unless you have another computer that can share it, or if you have no other way to transfer files. Backpack can be purchased from Central Computer Products (they advertise in Computer Shopper). Their phone number is 1-800-456-4123. It may also be available from retail stores.

Lester A. Sizchke, Grandville, MI

A Couple of Complaints About Software And High Praise for Rau

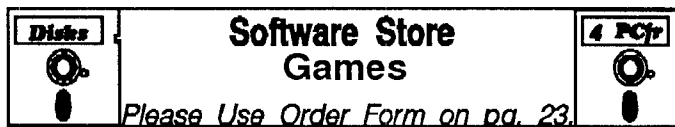
Re: your compatibility comments needed... I just had to resell a Parsons Technology (latest version) **Money Counts** program. It would not boot any way on my Jr (My Jr. is 640 total ram with 129K used on my Jr hotshot 512 memory board and DOS 2.1). I know the compatibility disk I have shows it O.K..... I wish I could find a good similar program, such as MYM or the Parsons without spending a fortune just to keep it...something that would print out all budget categories used.

The good side.. since buying the 512 Jr. Hotshot memory board I've had two (2) "troubled" opportunities to call PAUL RAU. Each time a person by the name of Jeanette answered. I cannot praise this person's brain enough. She is really a PCjr technician, a person that really knows what she's talking about. I am really impressed. I hope you can let the "Jr World" know how helpful she is... I'll do my business with Paul Rau...

The not so good news... About a year ago I purchased Disk #67, **As Easy As** (I wanted at least a 60 column spreadsheet that I could use to manipulate the calcs as I wished). Well, I received only the disk, and I'm assuming that's all you get. Therefore I figured every thing I need in the way of instruction is —ON THE DISK. Wrong. Or maybe I'm just naive...(dumb), but there is no way I can operate As Easy As with what I received. But there is plenty of instructions on how to spend another \$30.00 and get a manual to "show me how."

I think it's a little disappointing that we cannot be told this "up front," that the real cost of the program will be \$37.00 before you really get it to working right. Enclosed

(Continues on page 8)



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

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)

WAR ON THE SEA. Based on World War II naval battles, this game allows you to command a fleet in seven different campaigns in the Atlantic and Pacific. Not a joystick game, this one will allow you to see whether you have the strategic skills to be an Admiral. 256K (Disk #100)

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

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CALENDAR KEEPER V2.1. Keep track of important dates, birthdays, club meetings, etc. and print monthly calendars with these dates clearly noted in the proper squares. Prints wall calendars on standard size computer paper. Easy to use, menu driven, can keep up to 10 databases of events and reminders. Many features. Need 256K. (Reviewed 7/90) (Disk #115)

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)

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)

Reader Feedback

(Continued from page 7)

I have printed the total instructions that is available on Disk #67.....disappointed.

Enclosed is my re-subscription. Keep up the good work.

Keith E. Justice, Crystal Lake, IL

EDITOR'S NOTE: Earlier versions of Money Counts did run on PCjr's. We're sorry to hear you couldn't get the new version going. It's reassuring to know that you found good support from Paul Rau Consulting. We've had letters in the past few months praising the work of almost all of the PCjr specialists who now advertise in this newsletter.

As for your gripe about As Easy As, It's true, this is one of the few shareware programs that does not come with full instructions on disk. This may be because the authors assume you can get your hands on a Lotus 1-2-3 manual, which will provide the information you need, or, it may be because the authors assume you already know how to use 1-2-3, or it may be that they want your 30 bucks. But that's not the way shareware works, usually. Most shareware authors want you to have the information you need in order to use the software, discover its wonderful qualities, and then decide to support the author(s) by sending in your registration. So our guess is that one of the first two reasons cited above (or both) apply in this case. By the way As Easy As is an excellent spreadsheet program and well worth getting to know (and well worth \$37, too!)

Reader Reports On Games He's Tried

You may want to let fellow jr Newsletter readers know that **King's Quest V**, and **Search for the King** work on the jr. However, my jr has the Tandy modification, a v20 chip, and two 20 meg harddrives.

There are two versions of Kings Quest V, a 512K EGA version and a 640K VGA version. The 512K version is the one that works on my jr. I had to send back the six high density 5 1/4 disks and in return Sierra sent me fifteen low density disks. Even though Sierra indicates a hard drive is required, I ran a 640K VGA version on a 286 machine from the 3 1/2 disks without any problems. It did, however, require the usual disk swapping. The VGA version is very impressive!

I don't know if Search for the Kink from Accolade will run on a non-Tandy jr, but you don't need a hard drive to play this game.

Altered Destiny from Accolade does need a hard drive to run from, but I could not get it to load on to my

hard drive. I kept getting, "Bad or missing Command Interpreter" message. I called Accolade and they said it was looking for Command.com, because the files have to be uncompressed as they load to the hard drive. I tried their suggestions, but to no avail as yet. I guess this is partly due to the fact that I must still boot my computer from the a:drive.

Keeping up with Jones' from Sierra works just fine on my jr, and it is a real fun game according to my son.

Phillip Schwarz, Parsippany, NJ

More Tips on Adding a 3.5" Disk Drive

Thank you for running my article concerning the conversion of a 5.25 drive to a 3.5. Although the 3.5 drive worked quite well, I did have some problems with communications when downloading; i.e. at 5,120 bytes intervals, an excessive amount of short block and bad CRC errors were received. (I never could figure out the reason.)

Since then, I have ordered a complete 3.5 unit from Paul Rau Consulting, including the top, wiring, software, etc., at a very reasonable price. This unit has been installed as a second drive and also I reinstalled my 5.25 drive in the A drive.

My Jr unit has 640K of memory via the Jr Hotshot Memory Fast system, a Sears SR3000 RGB/CGA monitor, 1200 modem, Citizen 120D printer, original keyboard, etc.. I use the Jr PC-DOS 3.20 and the Cartridge BASIC.

The software received from Paul Rau had some very useful files for getting the new 3.5 drive up and running. In order to get the 3.5 disk recognized as the B drive the following command was listed on the 5.25 disk in the config.sys (RAMDISK) Disk #1.

```
DEVICE=JRCONFIG.DSK -13 -d2 -c -x
```

To format 3.5 disks, I copied the file format35.com from the A drive to the B drive. Type format35 while in the B drive, and, when instructed, swap disks in the same drive. If you need DOS go back to the A drive, type sys B: (enter) followed by Copy Command.com B: (enter) to the newly formatted 3.5 disk.

In order to get the new 3.5 to be recognized as the C drive, the following commands were entered in the config.sys on a separate 5.25 Disk #2: (BOOT)

```
DEVICE=FAST SYS  
DEVICE=35SYS.SYS /1  
BUFFERS=15  
BREAK=ON  
FILES=20
```

In summary, I am unable to copy back and forth, diskcopy, etc., depending on which 5.25 disk I use to rec-

ognize the 3.5 drive. Disk #1 will recognize the second drive as the B drive. Disk #2 will enable access to the following Drives: ABC. This is the way my working disks are setup, however, some systems may be using 3.3 DOS and different type of memory systems. There are lots of commands you can put in your config.sys and/or batch files. However, I believe in simplicity. If it works, don't knock it.

Warren Strunk, Newport News, VA

On Speech, RAM Disk Size, And New Educational Software

I have been receiving your fine publication for approximately two years and may I say many accolades for your fine effort in keeping the PCjr alive. Without your publication I probably would have given up on my JR. Things seem to be looking up; especially with the fine people at PC Enterprises who have helped me in the past.

I have a PCjr with two disk drives, 640K Quadram expansion DMA which was deactivated by PC Enterprises so the Tandy modification would work, a thin font chip and a V20 chip. Also, a JR speech attachment that I have not been able to get much out of. Is there some comprehensive manual or program that would make it useful? I would like to teach my pre-school son the alphabet by being able to graphically display a large letter of the alphabet. For instance, a program like Amy's Primer would have the PCjr speech attachment pronounce the letter when he presses a key. I am including a copy of that program.

I have a question that you might be able to help with on ram disks. Is there a way to selectively set up a ram disk without it being in the config.sys file (besides having multiple DOS boot disks) so it doesn't eat up ram if you don't need it.

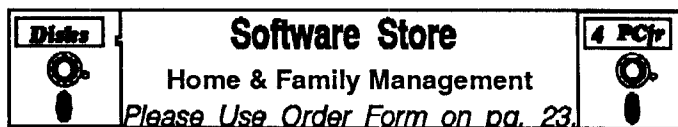
I would also like to know if there is a way to know if the Tandy modification is operational because I thought that with it, I would have 16 color capability. However, the programs that call for Tandy 1000 still come out in four colors. Is there more than one kind of modification?

I am also including a copy of Word Gallery that I think is an excellent shareware program. I hope you will include this in your software store. I found it works best from a ram disk.

In conclusion, I would like to say the Jr Newsletter has become an invaluable resource to me and I hope you will be around for a long time to come.

Zoran Valjasevic, Island Lake, IL

EDITOR'S NOTE: Taking your points in order, we thank you for your accolades. We are encouraged to keep going



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)

Especially for Junior

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)

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

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

Reader Feedback

(Continued from page 9)

whenever we hear from a reader who appreciates what we are doing. Next, your idea of linking a pre-school education program like Amy's First Primer with a speech attachment is a fine idea, but we don't know how it would be done. Perhaps a skillful programmer will read this and take the hint.

As for your question about adjusting the size of ram disks without having to reboot, there is a program that does exactly that. It is on our Disk #75 RAMDISK MASTER. Another alternative is if you are using jrconfig, to set up your RAM disk with RAM.SYUS. You can then remove it at any time without rebooting. Check the documentation that comes with jrconfig for details.

With your Tandy modification, you may have encountered one or more of the few programs where it does not produce 16 colors on PCjrs, even though it will do so with most software that is compatible with Tandy 1000 computers. There are a few variations in the Tandy modification, but yours should work on SOME software, unless it has been improperly installed (which we doubt, since PC Enterprises did it for you).

Finally, thank you so much for sending us Word Gallery. We tried it on our PCjr and were impressed with it. We are adding it to the software store. You will see a review of it in this issue. We appreciate it very much when a reader takes the time to send us a disk with software they have discovered and enjoy. Once other readers have tried Word Gallery, we are sure they will thank you too.

Reader's Configuration May Not Leave Enough Free Memory

I have a problem that I hope you may have seen before with other programs. The program is **Word Munchers** by MECC. The program boots up properly, but refuses to accept keyboard response. It then goes into a demo mode. I have more than the minimum memory requirement (512 k) and the program claims to be for IBM and 100% compatibles.

I have expanded my Junior's memory to 643K using the Racore expansion chassis. Almost all of the programs I have attempted to run have done so quite well. My config.sys file is as follows.

```
DEVICE=JRCONFIG.DSK -d2 -s90 -v16-c -t3  
FILES=20  
BUFFERS=20  
BREAK=ON
```

I have tried other variations with no success. I have checked the compatibility listings for this program but did not find it. Readers may not be familiar with the program.

It is used in local schools on Apple computers which my daughter attends. It is a game which teaches spelling and pronunciation. This is why I would like to have a working program. Any assistance or recommendations you have would be appreciated.

Lastly, I have always had a fondness for my PCjr because I was privileged to work as a technician in the facility which built the PCjr for IBM.

B. Balls, Murfreesboro, TN

EDITOR'S NOTE: We do not have specific information on Word Munchers, but if it requires 512K, you may not be leaving enough memory free. Change the -s90 in the first line of the config.sys file to -S1 and try again. With the configuration cited in your letter you are using the 90K for a RAM disk, 16K for video, additional memory for files and buffers, and you have to account for at least 20K which is reserved by DOS for its own use. The higher the DOS version, the more memory it eats.

Avid PCjr User Now Has 4 Juniors!

I would like to inform you that I think the newsletter is very informative as well as interesting to read. Since receiving it I have been able to learn more about the PCjr and as a result now own 4 complete units. Two of them have been upgraded to 640K, one to 736K and the other is presently sporting 512K. I have found in your newsletter information that I have been able to find nowhere else and as a result of information received on the behalf of the PCjr, I have organized it into my little PCjr notebook. Whenever any of my friends want to know something about computing. I just give them my notebook and show them how to find information in it. I guess you might say that I am presently a jr buff.

Rupert C. Tart, Angler, NC

Prodigy Updates Added To PCjr Autsetup and PCjr Patches

Both PCjr Autsetup (Disk #99), the disk that makes special PCjr boot disks for you automatically, and PCjr Patches (Disk #56), have been updated to include instructions and patches to enable you to run Prodigy's latest version software (which is Version 3.1).

The new version of PCjr Autsetup was modified for those who have 640K of memory on their PCjrs. It offers an additional option now for a telecommunications boot disk designed specifically for use with Prodigy. The disk also includes the patch which is needed on all PCjrs unless you have made the PCjr to Tandy 1000 modification on your PCjr. The latest version of PCjr Patches also has the patch for Prodigy V3.1.

Let Junior Help Teach Reading Following Latest Theories

Educational theories come and go, changing not quite as fast, but just as inevitably, as women's hemlines. Many people have been taught to read using the "phonics" method. The child learned what sounds the various letters made through long practice. Then the student was, hopefully, ready to figure out the mysteries of the written word. No easy task, given our absurd, unlogical system of spelling in English. Other readers were taught using the "Look-Say" method. They studied word lists, often with the use of flash cards. Then the young reader graduated to such thrilling reading as "See Dick run. See Jane run. See Spot run!"

For a while one theory predominated the educational establishment, only to be replaced by another. Actually the phonics method goes back to Colonial times, when children learned to read by sounding out their letters in the family Bible. In the 1800's Horace Mann of Massachusetts declared these rote lessons were boring for children. So he instituted the practice of teaching children whole words they could recognize rather than letters and syllables. Books based on reading lists became the trend. The most famous of these, McGuffey Readers, were used throughout the land.

The system was challenged in the 1950's with the publication of the book "Why Johnny Can't Read." Phonics was again re-instituted in the schools. But in recent years, with emphasis on "educational excellence" and "relevance in learning." there has been another swing of the pendulum back to the whole word method.

Reading Theory and the Computer

What does all this history have to do with computer learning? The history of educational theory shows a pendulum effect largely because no one method will be best for all children. Even if you are considering one, individual, child, chances are that a combination of approaches and methods will work better than any single method.

With that in mind, Jr Newsletter offers software for young readers which utilize both methods of instruction:

* We have long included "Amy's First Primer" (on Disk #48, Early Learning) which encourages recognizing initial letters--a reinforcement for phonics learning.

* Our newest software, Word Gallery, is designed to help children associate the whole printed word with the object it represents. It provides a set of colorful word-object flashcards. Children, aged 4 to 7, will enjoy watching the screen fill with color as they match the words with their pictures.

The program consists of four separate Levels.

LEVEL 1 When the child selects a picture, it will be colored and its word will be displayed. This level should be used first until the child becomes familiar with all the words and pictures.

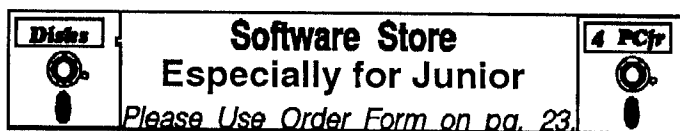
LEVEL 2 The computer will display a word at the top of the screen, and when the child selects the picture described by that word, the picture will be colored.

LEVEL 3 The computer will display a picture and when the child selects the word which describes the picture, the picture will be colored.

LEVEL 4 The computer will highlight one of the pictures and put the word which describes the picture at the top of the screen. The word, however, will be missing one of the letters. When the child types the missing letter on the keyboard, the picture will be colored and its complete word displayed.

In all levels, when all the pictures on the screen have been colored, a song will play. Word Gallery requires 256K, and the use of a mouse is optional.

Word Gallery is Disk #125 in the Software Store on page 23.



THE BEST OF JR NEWSLETTER III. Disk contains most of the major articles published in Jr Newsletter from the June 1988 issue through May 1989. Articles on compatibility, PCjr hardware and software tips, regular columns, letters from PCjr users, and other informative articles. Utility to search for subjects included. (Disk #91)

BEST OF JR NEWSLETTER IV. For your handy reference, disk has the most informative articles, columns, and tips published in Jr Newsletter from June 1989 through May 1990. Easy to use search utilities provide quick ways to find any subject of interest. 128K ok (Disk #118)

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)

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)

Loom Is A Fairy Tale Fantasy

By James Prossick

In the grand tradition of the fairy tale, LOOM, Lucasfilm Games' new graphic adventure and Junior spin an exciting visual and aural yarn for you to enjoy. Lucasfilm Games have used their computer gaming experience to produce one of the friendliest user interfaces on the market, and utilized their expertise in cinematography to present a big story on your monitor's little screen.

The texture of the palette and the detail of the graphics is the best use of the Tandy graphics mode I have seen so far. But the sensation of the senses doesn't stop there. The music score adapted from Tchaikovsky and the use of sound effects on junior was kind to the ear, never a distraction, and a true delight to be heard. Sound is the engine that drives this fantasy story along and carries the main character, Bobbin Threadbare, on his quest to save the pattern.

*"This is an adventure to experience,
not just to solve."*

Bobbin is the last of the Weaver's Guild, since the rest have literally flown the coop. The Weavers were the engineers, and more recently the caretakers of the pattern, which contains the threads of destiny for Bobbin's world. As you might have guessed from Bobbin's last name, the fabric of his world is getting mighty thin.

Without giving too much of the story-line away, suffice it to say this is the classic conflict of good against evil set in the mystic land of LOOM. Following a one-way trail, Bobbin collects the TOP 40 musical drafts, and uses them to SPELL trouble for the evil forces that await him on his quest. This is a form of sorcery Dick Clark could definitely relate to. "I give that spell a nine. It's got evil beat and I can really dance to it." Don't worry if your ear is made of tin or if you wouldn't know your cleft from your right, making music is as easy as you need it to be.

There are three modes, Practice to Expert, for spinning those drafts on that wonderful midi-music-stick, The Distaff. Practice mode lets you illuminate the notes on the distaff, see the sheet music play them out, and capture your last tune in text. Standard mode does away with the text capture and expert mode challenges you to play by feel and memory on the distaff alone.

The keyboard, a joystick, or mouse can be used to move your character and spin the drafts. Loom was written with a mouse in mind, and that seems to be the easiest device to operate with. Loom was also designed with a Hard Drive in mind, and with six game disks and one save disk in the 360K format there is a lot of switching. Luckily,

the program searches both drives, so there are no error messages as long as the right two disks are in place. The breaks for switching disks did have a slight negative effect on the story. But once refreshed, the graphics ran incredibly well and there was never a hitch or a systems crash.

There is off-disk copy protection in the form of "Name That Tune", or in this case "Name That Draft". It's a one shot deal after you boot-up and never gets in the way of the story. The user is allowed to custom configure for graphics and sound. I used Loom ts t 2d for my two drive system with Tandy graphics. The program will run in CGA or TGA if you've made the Tandy modification.

Use Junior's High Quality Sound

If you want Junior's full octave range then you'll need to turn on the sound before entering the program. You can use a Sierra Game or use the "Sound ON" program on Disk #119, PCjr Music Sampler, in the jr Newsletter Software Store to get the Hi-Fi quality you're after. The sound experience is integral to the enjoyment of this adventure, so make sure you tune up before you turn on.

Beside the magic of music, there are plenty of cinematic devices that move the presentation of this graphic adventure very close to an interactive movie, with the user taking on the starring role. The layout of the graphic screens and the cuts from the action to close-ups and panoramic vistas move the story forward in a truly dramatic fashion. As in George Lucas' big screen productions, special effects become a big part of the story and are done with a lot of class.

Improving on some cinema icons from the past, Bobbin takes a reverse fall into a black hole reminiscent of Dorothy's upward spin to OZ, the rip in the pattern reveals a starry universe brighter than George Bush's thousand points of light and nearly as bright as the backdrop for Starwars, and when you release chaos be ready for a cut-up on a par with modern day slasher flicks. Add a dump truck load of the Tinkerbell's best pixie dust and a sprinkle a day will produce some of the smoothest and entertaining transformations this side of the Old Werewolf or Invisible Man movies.

The transformations, or is that transmutations, of the Weavers to swans and a bag of bones back to a young blacksmith take place in a twinkle of dust, but without the usual herky-jerky graphics. In other words, it's done in a believable fashion.

There is not much chance of forgetting an important item or missing a crucial conversation with another character in Loom. Each situation must be unraveled before

you can move onto the next. This fail-safe mechanism forces you along a one-way linear path to the quest's end. The situations themselves are not difficult to solve, since you have a limited number of drafts and music is always the answer. Because of the straight line path you follow there is no need to map the terrain.

Loom would fall into the beginner to intermediate level of adventure games. But the real question is - Is Loom a game or an interactive story book? I think Loom exists in the fuzzy borderline between the two.

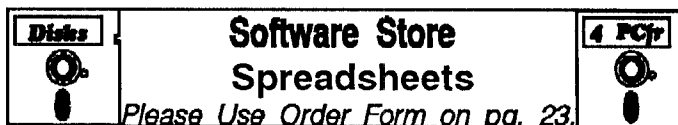
Loom follows the basic physics of all adventure games utilizing the formula - protagonist x correct action = forward story motion. But the focus of the action in Loom is switched from solving the puzzle to following the storyline. Fortunately the story is a good one, so Loom succeeds for the most part. There is no doubt that the story is often told by the characters instead of acted out by them, but with six full 5 1/4 disks I'm sure some scenes were left on the proverbial cutting room floor. Hardcore gamers may say there is more chrome than steel here, but I'm not one that has to bruise my fingers on the keyboard trying to work through a tricky conversation or bite the cuticles of my fingers bloody over a perplexing puzzle to have a good time. Loom lets you sit back and enjoy. This is an adventure to experience not just to solve, and with Loom's excellent mix of music and graphics it's a very enjoyable experience indeed.

PRODUCT - SYSTEM INFORMATION

Lucasfilm Games	LOOM	\$59.95 - Retail Price
P.O. Box 10307		\$39.00 - Mail Order
San Rafael, CA 94912		640K and 1 5 1/4 DD
1-800-782-7927		Tandy Mod Recommended

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.



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)

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)

Use Jr to Make Your Will With New Shareware Program.

"WILLS" is a program for designing custom wills. The program, more than just a fill-in-the blanks format for wills, provides a list of 45 matters to consider in making a will. After you read this text file, you are ready to choose the will that most closely fits your situation. The program offers a wide variety of wills which are designed for specific purposes. Here is a partial list of some of the wills provided:

- * Will for a husband or wife leaving everything to their spouse, and if the spouse dies first leaving everything to the children.
- * Will for a husband or wife leaving everything to their spouse, and since the couple have no children, if the spouse dies first leaving everything, in equal parts, to the brothers and sisters of the husband and wife, and if one of the brothers and sisters dies before the death of the spouse, the share of that brother or sister will go to his or her children, and if there are no such children then that share will be equally divided between the living brothers and sisters.
- * A very simple will by a married person leaving everything to their spouse.
- * Will for a single person, leaving everything in two equal parts to that person's parents, if one parent is dead leaving everything fully to the other parent, and if both parents are dead all the estate to be equally divided between that person's brothers and sisters.
- * Will for a single person, leaving everything in equal parts to that person's brothers and sisters, and if one of the brothers or sisters dies before that single person, leaving the share of that brother or sister to their children (in equal parts), and if that brother or sister has no children, the share of that dead brother or sister to the living brothers and sisters in equal parts.
- * Will for a single person, in contemplation of marriage. Includes a 30 day clause in the event of death of husband and wife within 30 days of each other.
- * Will for a husband that appoints a trust company as trustee, leaves personal and household effects to his wife, leaving a life interest to his wife with provision for income for his wife, with the remainder upon the death of his wife to the children.
- * Will for a married person leaving everything to their spouse, and if the spouse dies first everything to the children. However, before leaving everything to the spouse, the will makes some specific gifts to others.
- * Will for a farmer (male) appointing his wife as executor (executrix) and trustee, and empowering her to carry on farming business and let in children as partners.
- * Will for an unmarried man, providing for his sister un-

til her death, and then dividing the estate between his brothers and sisters.

Other forms included are formats for:

- * A codicil to a will. That is to say an amendment to an existing will.
- * A cover page ('backer') for your will.
- * An affidavit of execution of the will. This is for the witness to sign and swear to before a notary public (or the like) just after they have witnessed your signing of your will. This need not be done immediately, and can wait until death, but this is a good thing to do as soon as possible for many reasons.
- * A Power of Attorney.

A number of special clauses are provided to be inserted into the wills in special cases, such as:

- a) Where person making the will signs with his or her mark:
- b) Where somebody else signs on behalf of the person making the will :
- c) Where the person making the will is blind:
- d) Appointment of son as executor and trustee on attaining the age of majority.
- e) Wife is executrix (executor) and trustee until remarriage.
- f) Burial Clauses:
- g) Option to Son to Purchase Farm
- h) Release of Debts
- i) Forgiving of Debts by Trustee
- j) Bequest Not in Satisfaction of Debt
- k) Bequest for Masses

The program will run on most 'word processing' programs, because each of the forms is made of a flat ascii file.

Although there are many variations and types of wills, and the law of different locations (states, provinces, countries) are different, the author, who is an attorney, included wills that can be used in most all areas.

Wills requires 256K and is Disk #124 in the Software Store on page 23.

* Special Notice to Parents *

Did you know that, when a high school student was asked to identify Chernobyl, he answered that it was Cher's full name?

If you don't want that kind of answer coming from your kid, you better start participating in his or her education. One way to help is to encourage the use of educational software on your PCjr. There are many excellent titles to choose from, for all grade levels and all subjects.

Jr Newsletter Reader Survey

In order to make sure jr Newsletter keeps on serving you well, we ask readers every year to tell us about themselves. Please join with your fellow jr users and provide us with information we need in order to plan future articles.

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1. Please describe your PCjr - (Memory, drives, modem, etc.)
2. Please list what software you use and like best. Please indicate version numbers if possible.
3. What subjects would you like jr Newsletter to cover in future articles?
4. What do you use PCjr for? (Personal letters, games, business, study, telecommunications, etc.)
5. What software, if any, have you had problems with?
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Please use the other side of this page for questions & comments you would like to add.

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After you have answered the questions on the other side, please cut out this page and send it to:

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Thank you.

Are Your Printouts Becoming Invisible?

By George Gyunn

One of the most irritating things to me is getting some dot matrix computer printing from someone and having to struggle to read it because the print is almost invisible. The absolute worst I have seen are the bills from some local anesthesiologist. The printing looks like it was done on a dot matrix printer (circa 1981) that was still recovering from surgery. Even if the printout is only a bill, the quality of printing an organization sends out is part of its image.

It takes only three things to get good dark, crisp print. The first is a properly adjusted printer. The second is a good ribbon, and the third is a clean print head.....

(The balance of this article will deal with the cleaning of the print head - *Editor*)

Regular user cleaning of the print head is almost unheard of, but frankly, it is very easy to do. The method I use is so quick and simple that I do it once a month. I describe this procedure because it works and does not require removing the print head....

At any electronics store, pick up an aerosol can of contact cleaner. Make sure the label states it contains silicone, and that it will not harm plastic. Also make sure that the can comes with a plastic tube to plug into the cap.

This tube lets the fluid come out of the can in a stream instead of the normal spray.

To clean the print head, shut off the printer. Leave paper in the printer, but remove the ribbon. Gently move the print head to the middle of the carriage.

Next, cut a two-inch square from a lint-free cotton handkerchief. Fold the cut cloth over on top of itself a couple of times until it is about the width of your printer ribbon and has about four layers. Carefully insert it into the print head exactly where the ribbon was, between the pin guide and the ribbon shield. The cloth should be wide enough to be able to load it, but not so wide that it could catch on anything.

Insert the tube into the aerosol head. The put the end of the tube in contact with the cloth next to the pin guide of the print head. Give a short, quick press on the aerosol head. All you want to do is wet the cloth in the print head. You do not want the cloth to be so wet that it drips; you just want it so that the fluid can get in contact with the print head and soak up into the pin guide. You do not want to squirt the juice onto any other parts of the printer. Be careful and follow instructions on the aerosol can.

Let the fluid soak into the fabric for about a minute. Then turn on the printer and send a page of copy to the printer. Now move the cloth a little to the side so that the pins have a new clean section to hit. If necessary, give the cloth another shot of fluid. And then, print out another page.

Now remove the cloth from the print head and print some more copy [still without the ribbon]. When the garbage stops coming out of the print guide [and the printer stops printing as if it had a ribbon in it], the job is almost done.

If you have printed a couple of pages without the ribbon and see anything on the paper, put the cloth back into the print head and repeat the whole process. This may be necessary if you have used your printer for some time and have been through many ribbons....

(Also clean the guide rails or rod with the handkerchief while you're at it, but remember to use it sparingly. I even turn the printer upside-down and shake out the loose dirt and all those pin feed paper holes. — *Editor*.)

(This article was originally published in The Phoenix, newsletter of the NYPC PCjr SIG.)

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How To Understand and Use The PCjr Sound System

(Continued from page 1)

that we will learn. Because the high level programming language functions are written to handle a variety of computers and situations, they have a lot of overhead so that they are much larger and not as efficient the programs we will come up with. In addition, none of the high level programming languages have functions that take advantage of, or use, the superior sound generating ability of our PCjr's. Of course, since we will learn the very basics of chip programming you can use your knowledge to write your own functions within high level languages that will use Junior's abilities.

In this article we will examine, in detail, a couple of chips that can be used to generate computer sounds. Then, in our next article we will use DEBUG to create an Assembly Language program that uses these chips to make a few musical notes. Our program will not really be unique to the PCjr - it will run on any PC type computer,

and it will not use Junior's special sound generation chips. But, we will learn about ports and registers and bit manipulation so that we can go on to create a program that will use Junior's special hardware to make three part harmony.

SUPPORT CHIPS AND PORTS

There are several different integrated-circuit chips on Junior's system board which assist and support the computer's Central Processing Unit (CPU), which is the Intel 8088 microprocessor (or it's equivalent, the NEC V20). These support chips are also microprocessors and they can be programmed just as the 8088 can, but, unlike the 8088, each of these chips has been designed to accomplish a very specific task.

The CPU communicates with these support chips, along with many of the other devices that are part of the computer (Including the display, printers, and disk drives.), by means of input/output ports. In effect, these input/output ports are specialized addresses by which information is passed. Each port has its own number (The 8088 can handle up to 65,535 port numbers), and the CPU works with a particular port by sending instructions to the port number. The CPU can also read the current status of most ports.

The 8088's way of working, the Processor Instruction Set, requires that all data which is to be sent to a port be first placed in the 8088's accumulator (The AX register.), and conversely all data received from a port goes into the AX register. Registers are specialized portions of memory within the 8088 and other programmable chips. The 8088 has a bunch of them. Most of them have names, such as the Accumulator and the Count Register, but the 8088 instruction set refers to them as AX, CX, etc.

The registers in support chips sometime also have names, however the names are not used in programming. Each register in a support chip is addressed by the port number assigned to it.

We will look at two of Junior's support chips that are often used to make sounds - Intel chip number 8253 which can create a series of pulsed signals in almost any frequency, and Intel chip number 8255 which controls the speaker.

THE 8255 PROGRAMMABLE PERIPHERAL INTERFACE

The Intel 8255 Programmable Peripheral Interface (Usually, referred to as just the 8255, or the PPI) is, as its name implies, used by the CPU to interface with a variety of peripheral devices that are connected to the computer. The PPI has three ports, numbered 96, 97, and 98, but we are interested in only one of them. Port number 96 is used by Junior as a temporary storage location for keyboard input, and port 98 is used mainly to show when certain optional hardware - a modem, a disk drive, or a 64k

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memory expansion - has been installed on the PCjr. Neither one of these ports is especially useful to us, but Port 97 is. Port 97 (61 in the hexadecimal number base) accesses an eight bit register which has bit assignments as shown in Figure 1.

The bits are always set to either 1 or 0. You will notice that, with two exceptions, the bits affect either the audio system or the cassette recorder system. The exceptions are bit number 7, which is unused, and bit 2, which shows whether the video system is in a graphics mode or a text mode. You can use this bit to change video modes, but there are better ways to do it, so usually we don't want to change this bit.

Normally, for a PCjr, the value in port 97 is hexadecimal 0D. Which means that the bits are set as follows:

0 0 0 0 1 1 0 1

(The article "Exploring Your Junior with Debug, Part 2" in the July 1989 jr Newsletter explains how to convert hexadecimal numbers to binary.) Comparing this bit pattern with figure 1, you can see that sound source (bits 5 and 6) is the 8253 channel 2, the internal speaker is enabled (bit 4), the cassette motor is off (of course you most likely do not even have a cassette motor), the display is in a text mode (bit 2), the speaker is currently off (bit 1), and the speaker input gate uses the 8283 channel 2 (bit 0). We will explain shortly what the references to the 8253 channel 2 mean.

All PC compatible computers have a port 97. If they didn't they wouldn't be PC compatible. And bits 0 and 1 are always for speaker control, just as in the PCjr. But the use of the other six bits varies greatly. In fact, even the almost identical IBM PC and the IBM XT are not identical in their use of the bits in port 97. Therefore, it is important that programs for sound generation change only the first two bits.

An exception to this will be when we want to use Junior's three-voice 76496 sound generator. Then we will have to set bits 5 and 6 to one to activate the 76496, and this will cause the program to be incompatible with other computers.

You can make sounds from the speaker with just with this port by first turning bit 0 to 0 and then by rapidly turning bit 1 on and off. This method is seldom used for making musical sounds because it is difficult to accurately control the frequency across a variety of computers. A much better way is to use the PPI in conjunction with the Interval Timer.

THE 8283 INTERVAL TIMER

This chip is set up to do any timing or counting activities that the computer might need done. It is a versatile and interesting chip. We could easily devote an entire article to just this chip, but since our present objective is to

(Continued on page 20)

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(Continued from page 17)

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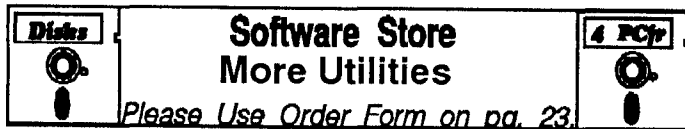
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How To Understand and Use The PCjr Sound System

(Continued from page 19)

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)

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create some music we will cover only the features that relate to sound production.

Within the Interval Timer are three independent counters, called timer channels, numbered 0, 1 and 2, and each connected to the computer through a port. Each of these three channels work the same, but are used for different purposes. Channel 0 is used by the computer to keep track of the time of day and for disk motor timing. Channel 1 is used on the PCjr, as a timer for keyboard input (On the PC it is used for memory refreshing.). Both of these channels can be programmed, but they seldom are because changing them will affect keyboard input or disk drive operations. Channel 2 is available for general programming use and it's often used for sound generation.

A diagram of a typical channel is shown in Figure 2. There are two registers in the channel - a latch register and a counter register. Both registers hold sixteen bits (two bytes) of data. A key feature of the counter register is a clock input which has a steady 1,193,180 cycles per second for use in timing activities. The effective clock rate of the CPU varies greatly - in the PCjr it is a nominal 4,770,000 cycles per second - depending upon the basic speed of the computer and what extra work the microprocessor might be doing.

If you used the computer's main clock rate to set the frequency of a musical note, that note would much have a much higher pitch on a 286 or a 386 computer than it would on a PCjr. Even on a PCjr the effective speed of the microprocessor depends upon how much memory the computer has and how it is configured. On the other hand, the clock rate of the 8253 timer never varies. A note programmed to have a frequency of 523 Hz - the middle C note - will sound the same on any computer.

The counter registers also have an OUT signal which is directed to other parts of the computer. For channel 2 the out signal can be sent to the speaker by way of the 8255 PPI. That is the reason for the references to the 8253 in the PPI. When bits 5 and 6 of the PPI's port number 97 are set to zero (Which is Junior's default, power-up state), the sound source is the 5253 timer; and when bit 0 is set to one, the PPI will direct any signal from channel two of the 5253 to the speaker.

A channel can be programmed to operate in any of six different modes of operation. Most of these modes are of little value to us. For sound generation, mode number 3 is the most suitable mode to use and when a channel is in this mode it operates as follows:

1. A number is programmed into the latch register.
2. The number is immediately copied into the counter

register.

3. The out signal is turned on.
4. With each pulse of the clock the number in the counter register is decremented by one.
5. When the number in the counter register is one-half of its original value, the out signal is turned off.
6. When the number in the counter register reaches zero, the number in the latch register is again copied into the counter register, the out signal is turned back on and the cycle starts all over again.

This mode of operation results in a regular on-off signal with a set frequency - just like a sound wave. For generating sound, this signal is sent to the speaker so that the speaker is turned on and off at this same rate, and thus it makes a sound of that frequency. To make a middle C note, for instance, just place a number in the latch register that will cause the output signal to pulse at a rate of 523 cycles per second. Since the counter register is decremented at a rate of 1,193,180 counts per second, we can use the following formula to calculate the count value that will produce a note of any frequency:

$$1,193,180 / \text{Count Value} = \text{Note Frequency}$$

For example, to make a middle C note, the number to program into the latch register is:

$$1,193,180 / 523 = 2281$$

(To be continued next month)



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)

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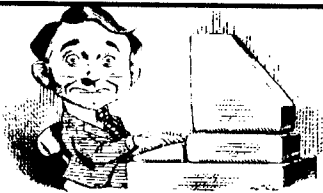
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Software Listings In This Issue:

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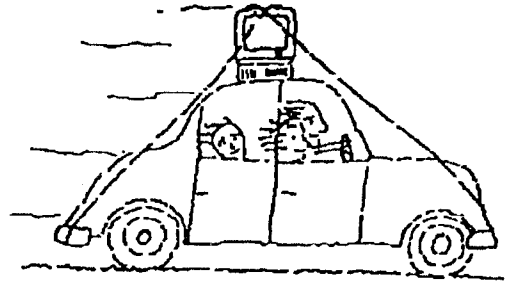
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