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Page 6 Publishing's

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# ATARI USER

*The Resource for the ATARI CLASSIC and the ATARI ST*

Issue 85 - Autumn 1998

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## FOR THE ATARI CLASSIC

### ♣ LEAGUE TABLE

*Follow your favourite teams*

### ♣ SUPER FILE READER

*A neat simple way to read doc files*

### ♣ A SHORT HISTORY OF COMPUTERS

*Celebrate the 50th anniversary  
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## THE FINAL COUNTDOWN

**A** I bet, another issue of N&A goes through your door. Thank you for keeping the faith and not heading me too much.

Really all the good intentions for this year have gone to pot as the current government continues the previous government's policy of trying to destroy those who don't have conventional jobs. All this business about controlling inflation merely sacrifices people like me on the altar of those who already have most of the money. Increases in interest rates, and thus mortgage rates, stops people spending money which makes it more and more impossible for people like me to make a living. As you know I am aside a number of weekends this year to commit to N&A but because each craft that I have done this year has been worse than last year I have had to use each of these weekends to do more labor in order to be able to stay afloat. That means, of course, no time to complete the mag. This month (October) has been so bad that it is almost certain that I will now have to find a conventional part time job working nights, or whatever, in addition to the craft work. That of course means even less time. God knows how I will cope.

It seems obvious that I need to give you, the faithful supporter of N&A, a commitment that you will get the magazine you expect and whilst I cannot guarantee each issue will be as thin I can guarantee that there will be a certain number of future issues. I have therefore decided to begin the final countdown for Page 4's New Start Year. There will be six more issues of the mag after this one and then I will call it a day. It is unlikely that each issue will be as the bi-monthly double but you will get the mag as you expect. We are already the longest published start magazine and my aim now is to be the first start magazine to close publication without its readers losing money on their subscriptions. As your subscription falls due you will be asked to renew only for the number of issues remaining.

As each issue is published it will become more and more difficult for me financially since there will be less and less renewed income. I therefore ask you to please ensure that you renew your subscription for the remaining issues, even if you no longer use your machine as much as you used to. Your commitment thus far has been much commendable, please now stick with us to the end. It is vital that we receive your continuing support.

Here's what you can do:

- Renew your subscription when requested and know that you will get the rest of your mag
- Continue to buy a few PD disks now and then as this is our only source now of additional support
- Make sure that you contribute to the remaining issues by writing letters, articles or sending programs

I am committed to giving you six more issues of N&A to take us up to the millennium, but I need your support to do that. Let's all stick together and hang out gracefully, knowing that we created something great over all these years.

*Les Ellingham*

# SUPER FILE READER

by James Austin

**T**he Super File Reader (SFR) is a document file reader in Turbo BASIC (XL/XE computers only) that I have written to enable quick and easy reading of document files in a properly presented fashion on-screen.

SFR has several features which set it apart from most other programs of its type. Firstly, it loads in as much of a document as it can in one go, so giving some way to viewing the need to keep the disk in when reading the file. Secondly, it automatically formats all documents during the reading process in order for word-wrap and to ensure correct presentation when the files are displayed on-screen. And finally, it allows you to go back and forth at leisure through your documents, so you can go back and look at anything you might have missed or want to read again.

Although all references made in these instructions are to DOCUMENT files, it is also possible to load in and read other files if desired - however, it may be preferable to use a word processor program (such as TextPRO) for this purpose.

SFR has a text buffer of 26,500 bytes (approx. 26KB) which will allow document files of up to 110 sections in size to be loaded in one pass - in practice this means that most document files will load in one go, however files larger than this one still be loaded in sections using the special scroll file

command built into the program.

I hope that you find SFR to be a useful program. Not exciting I know, but it was written to satisfy a need that I had and so it may well prove useful to you too.

## THE MAIN MENU

All of SFR's operations are controlled through its main menu, which is displayed automatically at start-up. It displays 4 different options:

- (1) Read in file
- (2) Display file
- (3) Disk Directory
- (4) Exit SFR

To access these options, press (1), (2), (3) or (4) respectively. I will go through each in turn, starting with the main two options - (1) and (2).

Options (1) and (2) allow you to load in and display your document files respectively. A document file must have been loaded in previously and be resident in memory before option (2) can be accessed.

## LOADING IN DOCUMENT FILES

Press [I] first of all. The main screen will clear, and the message "FROM WHICH FILE?" is displayed. This is a prompt for you to enter the name of the document file you wish to load in. so enter it here and press RETURN. No device should be entered. Wildcards are not supported. Remember to have the proper disk in the drive before you hit the key, since the program immediately begins to scan the directory sectors on the disk to locate your file. If your file is not on the disk, then the prompt "NO SUCH FILE ON DISK?" will appear, and you will be returned to the original prompt to try again.

If your file is found, then the program will immediately begin scanning that file's sectors. DO NOT TAKE THIS ONE OUT AT ANY TIME. DURING THE LOADING - the program uses a machine code routine to access the Device Control Block and Internal Disk Handler routines and, although nothing very should happen, don't try it. This could crash the computer or even corrupt your disk in its doing.

If the prompt "TOO LONG - FORMATTING FOR LOADS..." appears, then the file is too long to load into the buffer in one pass. This time is critical for later on when I will explain how to load in oversize files. If the file successfully loads in one pass, then the prompt "FORMATTING FILE..." will appear instead. The program is now formatting your document. The length of time this will take will depend on the length of the file you have loaded, also whether it is a text document or not. If you load a non-document file then you may well be waiting a LONG while as the program will have a bigger job on its hands than with a document file. Otherwise, you should not be kept waiting too long. Once this has been accomplished you will be returned to the main menu.

## DISPLAYING DOCUMENT FILES

Now press [E]. The screen will clear and the first page of your document displayed on the screen. Notice the prompt "PAGE # OF #", which appears at the bottom of the screen while this is being done - this tells you what page you are currently on, as well as how many pages there are in total. Once the page is completely shown on-screen, this is replaced by a small menu:

### • - BROWSE P CHOOSE PAGE ESC TO EXIT

Pressing [v] will display the next page in the sequence (if there is one), while [b] will move back to display the previous page. Pressing [ESC] will return you back to the main menu. If you press [P] then the screen clears and the message "NEW PAGE #?" appears. This is a prompt to choose which page you wish to go directly to. Enter the page number of your choice and then press RETURN. Only valid page numbers will be accepted. The appropriate page will then be displayed and you will be returned to the above menu.

## OVERSIZE FILES

Now on to the subject of reading in oversize files. To read the next part of the file, press [I] again - the message "CONTINUE LOADING SAME FILE Y/N?" will be displayed on-screen. If you press [Y] the next segment of the file will then be loaded in, formatted and displayed in the same way as described previously. If you press [N], then the load is terminated and the prompt to load an alternative file comes up. It should be noted that the previous part of the document file is lost when a new part is subsequently loaded in, so you will need to load the from scratch to view previous pages again.

SFR will cope with as many additional parts of a document as are required to load the file in completely. It will also ensure that words are not broken between segments of a file but are instead presented to full on-screen when the next part is subsequently loaded in.

## DISK DIRECTORY OPTION

Option [D] allows you to obtain a directory of the files on a disk in the default drive (usually drive 1). Ensure that a disk is in that drive before accessing this option.

The directory will be scanned and the files on the disk displayed in two columns on the screen. If there are too many files on the disk to display on the one screen, the message "CONTINUE READING DIRECTORY Y/N?" will appear at the bottom of the screen. Pressing [Y] at this point will clear the screen and display more of the directory, while pressing any other key will exit back to the main menu. If the files do all fit on the one screen then you will be asked simply to press a key to exit back to the main menu.

## EXIT SFR

This is the final option available from the menu, accessed by pressing [M]. When this option is accessed, the prompt "DO YOU WANT TO EXIT Y/N?" will be displayed. Pressing [Y] will exit this program and place you in the Turbo BASIC editor. Any other key will return to the main menu.

## PLEASE NOTE...

SFR automatically inserts inverse materials into your document file to format the pages so that they appear properly on-screen. This means that it is not possible to include in-

verse material characters in your documents, since this would corrupt the pagination and cause parts of your document to disappear. The program therefore converts all inverse materials that it finds when loading the documents into "normal" (non-inverse) ones.

## A BUG IN TURBO-BASIC?

Now here is a question for all experienced readers out there. In those a long with the INDEX/LENGTH commands in Turbo BASIC?

```
10 DIM TEXTS(5):TEXTS=""@""
20 LET LOC=INSTR(TEXTS,"")
```

I found with this example that LOC equals 2, not 1 as I would have expected. What seems to be happening is that the command is "missing" the first apostrophe in the string, possibly because it is beginning the search from the SECOND character in the string rather than from the first one as I wanted? Change line 20 to:

```
20 LET LOC=INSTR(TEXTS,"'")
```

and LOC becomes 1, the answer that I thought the first example would have given me!

I wasted a LOT of time with this when writing SFR. Is there a bug?

## FINALLY

If you experience any difficulties with using the program, don't hesitate to contact me at: 19 Clare Road, Biddley, nr. Derrygoonaw, Co. Wick 10, ENGLAND and I will try to help you out as best I can.



# Mailbag



## DID YOU WRITE?

Yet again we have one of those issues where only a few people decided to write in. I know the copy date for this issue was supposed to be really close to the date you received your last mag, but don't let that stop you writing. Write to us at any time. If your letter doesn't make it into the next issue it will go in the one after. We need your letters, they really help us out and let us know you are still interested.

Les Ellingham

## WHICH PRINTER?

*Reader: W. J. Porter from North Chingford has a problem that he would like your help with, which might also be a good starting point for an article.*

"For many years I have used an Atari 1050 Printer/Plotter, but now it is not possible to obtain supplies and I would like to output text from disks such as Home Filing Manager. The problem is how do I install the disk to output to my Epsons printer?"

The problem also applies to other disks which I have purchased from Page 8's Library in past years. Perhaps one of your more expert readers may be able to answer this, or possibly write an article on the subject as I am sure that I am not the only reader with this problem?"

I don't know about Home Filing Manager which probably has its own method of saving files but I can't see why you should have problems with Page 8's Library disks which have not to be used for specific printers. Of course you may be talking about programs that were specifically written for the 1050. On ordinary DOS files you may like to try using DOS

to dump the files to your Epson. All you do is call up DOS and use the Copy option (C) with the parameters *file name.ext* which will dump the file *file name.ext* of course use the name of the file you want to print to your printer. You won't get any formatting but at least you'll get printed copy. There are many other ways of getting printed copy such as saving text versions of files in disk and then loading them into a word processor. Maybe this can be done with Home Filing Manager. Perhaps someone can check this out and write into Mailbag or put it together as an article.

## MORE 1050 PROBLEMS

John Barker has a problem that the more practical hardware buffs can probably help with. The more years, my family has enjoyed the use of our original purchase 8085, and the second 1050 which I acquired a few years ago.

The problem? A few weeks ago when the machine was taking a rest from the children, but was left powered up, I noticed a strange smell, then I saw a thin stream of smoke rising from the second

1050. The drive is fitted with some sort of inhibitor chip set in the UFI socket. Examination of the circuit revealed that two small capacitors (0.05, 0.001) immediately in front of large blue capacitor C88 and between TP14 and TP18 were completely burnt away, and had slightly damaged C68. I also noticed that CR15 and CR16 (2 diodes?) between the large capacitors C71 and C88 are both swollen and one is cracked. Is it likely that the replacement of these components would restore the disk drive, or could some underlying fault have caused the overheating? Advice on repair would be most welcome as I have no service manual/information on the 1050.

If repair proves to be not a practicable solution a "swap-out" ad for a replacement drive would be the answer, as life with the single drive is so frustrating!

Incidentally both drives did read and write satisfactorily, although some disks seem to have a delicate preference for one or the other, however both give trouble with formatting with failures appearing to come on the final tracks. Is there a simple reason for this?"

Incidentally both drives did read and write satisfactorily, although some disks seem to have a delicate preference for one or the other, however both give trouble with formatting with failures appearing to come on the final tracks. Is there a simple reason for this?"

## ... AND PROGRAMMING

John once changes back and forth a lot of programming. His letter continues: "Now for something completely different. I would like to try my hand at programming our Atari (machine code that is, so I need some literature on the subject, including the memory layout of the machine. If there's someone out there who could help, I'd be eternally grateful.

Finally, a few years ago I began procedures to get a 3" disk drive interface from Derek Pons, but he various reasons at the time I let the matter drop. I now would like to purchase one of these interfaces if they are available."

I think for writing, John, I can't help with the 1050 problems being above my head but I am sure that there are readers who can. As to the machine code writing you will have to get hold of some second-hand books or there is nothing currently in print. Next best is for someone with some surplus funds to get in touch with John direct. You can give him a ring on 01245 580025. Of course you might be able to help with the disk drive problem by talking to him but if you do please write

write to Mailbag as I am sure that the solution will be of interest to other readers.

## DIY BINDERS

John Robinson up in Clarendon Park some more suggestions for making your own binders for N&J which he feels might be cheaper than Eddies Jones' method in Issue 84.

"Again, use the Final Budget binder number 10420 and obtain a pack of Crafts 84 punched pockets, usually sold in 50s but currently available from Asda and discount stations for about 41 for 40. Take a pocket and fold it lengthwise, then cut it two with a very sharp knife. Use with the plastic ball. Fold the ball with the white punched strip attached, and cut that to half again. The result will be two transparent pieces 115mm long by 115mm deep, each of which will hold one copy of N&J, right the bottom of the pocket, to allow the two 'pages' to open out. Next, carefully mark the cover of your magazine 50mm from the top and 20mm from the bottom using a soft pencil. Obtain a UHU glue pen, and apply the glue to one inner side of the plastic bag, mid-





die and bottom, then the outer edge is cut at a sharp angle and gives the back of the magazine cover firmly onto this. On the other half, attach to the front cover and there you have it, a new through means of utilizing the spring clips in your basket.

**Two tips** - the second cut, to halve the spine of the pocket will cut through a hole which is exactly in the centre of the punched spine - always ensure this half hole is at the same end of your magazine, in the interests of neatness, and always use a very sharp knife to cut the pockets - they are tougher than you think and also very slippery. Each later die holds six copies, very handy!

I thank thanks, John, it is always helpful to share ideas. In closing John has asked if anyone has a copy of the *ST/CLASSIC* appendices they no longer want as he is desperate for a copy. If you need it in or out, we will pass it on.

## KEEP YOUR ST!

John Harrington is one of those people who 'upgraded' to a PC but who has never

found that his ST can still be put to good use. He explains - 'A while back I bought a batch of ST HD stuff from you. My muses were mainly selfish - to get my three boys to have the PC along as I could use all my kids are all aged under 6 and the GEM interface is not as familiar to them as Windows 95 so initially they were all reluctant to use the ST, but on Sunday I finally found the time to set the ST up and go through the discs or so disks you sent me. The inevitable result was that the three ended up fighting over who had command of the joystick. In between punch-ups it kept them amused for about 6 hours which means I have already had my money's worth.

The new young have enjoyed it and 6, particularly enjoyed the *Big Potato* (read and *Spelling*) disk games whilst the eldest enjoyed *Pacman* which, so far as I can see, is indistinguishable from the arcade version.

Oops, some of the software is incredibly rudimentary - the arithmetic tests on one disk are just test and random numbers - but for the school school generation it led down not even to matter too much and (a) it's helped to train their work.

So, as soon as we have worked this lot of disks dry I'll be ordering another batch. The only drawback with the ST is the lack of a hard drive - it would be great if the files were just now (double) click away from running were the ST is switched on. No, although it defeats the object of encouraging the kids to use their own computer and not my PC, I downloaded an Atari ST emulator from <http://jazzfish.bendings.com/> this week. I can tell you it really was very exciting the GEM desktop on my PC. I'm not entirely sure I have got it up and running properly yet as I tried an old favourite game of mine called *Gridman* and it said the disks were unavailable. I haven't had the time to try them out as the ST yet to see whether the disks are merely unavailable as the PCs disk drive is grossly damaged.

There are, of course, emulators for the Atari Classic and I downloaded the *Emu* for that too. The drawback is that although I have a 104 disk drive on my PC, it won't read Atari Disquettes. I've not read the documentation thoroughly yet but it appears there is some cabling needed to hook up my Atari disk drive to the PC. There are some Atari

## ST/CLASSIC PROGRAMMING



Classic 'disk images' available for download from the Web, which means you can run them directly from your hard drive, but most of the games I want to run are strategy games (*Battle West*, *MPTG/PT*, *Seven Cities of Gold*) and not the arcade titles that most people seem to run of their Atari.

I know your correspondents have covered emulators to previous issues but it might be an idea if these people still supporting the Atari Classic were to put together an 'emulator package' for key devices like me and publish it through your magazine.

I bet you are now glad that you didn't sell your ST for a pittance as a car boot sale like so many other people! The absolute answer to the lack of a hard drive for your ST is to buy one! Believe it or not you can still purchase a hard drive for the ST for less than you could a couple of months ago. They are not quite as cheap as those available for the PC but are considerably less than the £250/£400 you had to pay for the Super drives. Because the ST is still widely used in music environments there is quite a demand for upgrades and one of the music mags recently reported that The Upgrade Shop is

moving/they can supply some amazing hardware upgrades. They state that an internal hard disk drive can be added to an STX for £180, for a 170MB model going up to £160 for 720MB. You can fit it yourself or have it fitted for you for £15 plus £5 courier collection and delivery in each direction. A couple of years ago The Upgrade Shop were also advertising external hard drives for the ST at a much higher price, although this is sure to have come down and these may still be available. If you are used to using a PC hard drive then you might think that 170MB is a rather small drive but the PC is incredibly inefficient in data storage and 170MB on the ST is more than you can ever likely to need. I have a 200MB hard drive and it opens up squally with all I have to do. Just think, with 170MB you can store something like 250 single-sided ST disks!

If you want to get more disks give The Upgrade Shop a ring on 01625 503448.

## RANDOM NOTES

Alan Palmer has promised to organize some of his ramblings into an article for us

(committed you now, I think) but to the meantime has a few random notes of interest. 'Any information on Atari Shareware for PCs would be more than welcome; hopefully some of our readers can elaborate on this.

Kevin Cusker's letter to the last issue had plenty of interesting comments, although as you'd probably guess from my last letter, I disagree with Kevin that the Internet/World Wide Web has given him limited success. You need to put a bit of effort into a search for what you need and be specific. 'Think Building Spaceways' would have been a better search term than just '700'

Finally could you please rate my new e-mail address which is now [Alan\\_Palmer@bt.com](mailto:Alan_Palmer@bt.com)?

I thank thanks Alan, your e-mail address should now be correct in our Internet Classics column. Your point about searching on the Internet is well taken although I continue to have the odd double and I will not get to grips with refining searches. The problem is that all of the search engines seem to use different criteria for their search with some requiring internal searches around a



phant, others needing understanding between linked circles and get others relating plus signs on circles to be included. It is okay if you have unlimited access to the Internet at home or at work; even better if you don't pay the phone bill but when you have a fax at the library, it is difficult to learn all the different ways of using various programs. Perhaps, then, you or some other reader could do as a short article on the best way to use various search engines, using some sort of practical example? I know that there are various books around that may give you this information but it would be handy to have it in one place. Incidentally, *Don't Forget the Libraries* are now hooked up to the Internet and offer reasonably priced (at just £1.50 per half hour with print-out at just 50p per page, the main trouble is that none in the library has the smallest idea of how to use the World Wide Web and can't give a novice any help whatsoever. I understand that that you have to leave all sorts of progress to become a librarian just when it comes to learning about what will be the future of information gathering and research, none of them seem to want to know!

## GOT A PC?

Here's a way that you might be able to help other readers. We have to face up to the fact that a lot of our readers will eventually get over to using a PC, even if they intend to keep their Amiga systems. After reflections of PCs change almost weekly so it is virtually impossible to recommend a particular set-up as being the best for a particular purpose. If you already have a PC, have about writing to us to let us know what it is. Who makes it? What processor do you have? What 'screen' are you using? How it seems to work? How often does it break down? Does the manufacturer give good service? Don't tell us you wanted it in the first place. Would you now go for something different?

Tell us about your experiences for the next Mailbag, or for a special article, and your experience and advice could help others in their decisions. Sending reviews to PC magazines is pretty useless, as all they want to do is push the latest magazine, and they make it sound as if you may as well not bother unless you have the latest 486/50 processor with a DVD-drive, and is then £1,000 to purchase

## THE ACCESSORY SHOP is still going!

Check your PC coming and try to make a few extra bits later - it will really help us with our last six issues

Your practical experience is far more valuable to readers who need to make the conversion, so share it with us.

And... believe it or not, folks, that was it for Mailbag this time even though there have been a long gap between issues. When I first started this issue a couple of months ago we only had two letters! Let's have a lot more for the next one, there is still plenty to talk about. The address, as always, is:

MAILBAG  
NEW ATARI USER  
P.O. BOX 54  
STAFFORD  
ST16 1DR

Page 6's New Atari User

## XL/XE PROGRAMMING

# SUPERCIRCLES

Joel Goodwin does the maths to help you to draw the perfect circle - well, almost!

Drawing a circle is something that is necessary from time to time but the standard routine is slow. This article describes an attempt to speed up the routine by using an alternative approach.

## THE IDEA

The usual way of drawing a circle is to use Pythagoras' theorem. You can use a SIN/COS function approach, but this turns out to be slower. Pythagoras' theorem relates the radius to the X and Y coordinates of a point on the circle, so by varying either the X or Y coordinate we can determine the other. However, the formula used is  $\sqrt{R^2 - X^2}$  or  $\sqrt{R^2 - Y^2}$  which involves a square root function; this is what drags the calculation down. We can optimise the method by using the circle's symmetry to reduce the amount of work we

need to do, but SQRT is slow and ideally we would like to replace it with something more efficient.

The SQRT routine treats the circle as a collection of points and each point is found individually. Another approach is to try to follow the path of the circle; that is, each new point is thought of as an 'update' of the previous point. This is possible through an approximation of the slope of the circle; it involves a little calculation, so if you're interested see the Mathematics section at the end of this article. This new approach replaces the SQRT function by an addition and can also be accelerated by relying on the symmetry of the circle. The resulting 'Supercircle' submachine is demonstrated in Listing 1.

## THE DEMONSTRATION

The demonstration program will first compare the speed of the standard and supercircle routines. After this, it will then attempt to draw standard circles with supercircles. This will show you that the supercircles are not the same as the standard circles; personally, I prefer the supercircles but it is up to you to decide which one you like best. The program will then show you a filled supercircle and finally proceed to draw two large circles in graphics mode; one is a standard circle, the other is a supercircle.

The difference in speed will not be as significant

Page 6's New Atari User



# LEAGUE TABLE

by John Foskett

**W**hen organising sporting events where many teams compete against each other, some form of correlating the individual scores and displaying the overall results in a clear and concise way is required. The organisation of our national game over many years has led to the football league tables as we know them today and 'League Table' was written to reflect the same principle exactly. In the same way as the Matthews football league and the Carling Premiership, League Table gives 2 points for a win, 1 point for a draw and no points at all for a loss. League Table allows you to create new blank league tables, to update them by entering the individual scores and to display the tables on screen together with the option to print the tables on using an Epson compatible printer. League Table also sorts the competing teams into order in accordance with the points accumulated and where teams are on equal points, using the goal difference in the same way as the football league tables.

## THE MENU

Upon running the program, the following menu is presented and each option on the

menu is described below...

- (A) LOAD DATA FROM DISK
- (B) SAVE DATA TO DISK
- (C) SORT DATA
- (D) CREATE LEAGUE TABLE
- (E) DISPLAY LEAGUE TABLE
- (F) ENTER RESULTS (UPDATE)
- (G) LIST FILE DIRECTORY

(A) **LOAD DATA FROM DISK:** Upon selecting this option, a number from 0 to 9 is prompted for to access one of the ten data files previously saved to the disk. If the selected file is not on the disk, then an error will result and ESCAPE must be pressed to exit. ESCAPE may also be pressed to exit from the prompt without loading data and without corrupting the data currently in memory.

(B) **SAVE DATA (TO DISK):** When this option is selected, a number from 0 to 9 is prompted for in the same way as option (A) above in order to access one of the ten data files. Following the number of a previously saved file will ensure that file is in communication with the current data. If the selected file has previously been locked using DOS, then an error will result requiring ESCAPE to be pressed to exit. ESCAPE may also be pressed from the prompt to exit without the current data being saved.

(C) **SORT DATA:** Immediately this option is selected, the current data in memory is sorted into order according to the number of points

the teams have accumulated and if some teams are on the same number of points, then the goal difference are taken into account. The goal difference being the difference between the total number of goals a team has scored in the league and the total number of goals scored against them. This option can only be selected with data in memory, but if selected with no data in memory, then ESCAPE must be pressed to exit.

(D) **CREATE LEAGUE TABLE:** This option is used to create a new blank league table. If this option is selected with data currently in memory, then the option to continue is given by pressing either 'Y' for Yes or 'N' for No. If 'Y' is pressed to continue, then any data currently in memory is erased, but if 'N' for No is pressed, then any data currently in memory is preserved. A league may contain of up to a maximum of 24 teams or a maximum of 10 teams. The team names may consist of up to a maximum of 18 characters each in any combination of uppercase letters and spaces. Exit is automatic after entering the 24th team name, but TAB must be pressed to exit with less than 24 teams, but note that a maximum of 10 team names must be entered before TAB is enabled. After exiting to both cases, ESCAPE must be pressed to exit back to the menu. At this point the new blank league table data is contained in memory and so it is only a matter of saving it to disk using option 'B' as previously described. Note that pressing ESCAPE to exit at any other time will cause

the newly created data from memory and also note that any team names entered which is a repeat of a previously entered team name either in full or in part will be rejected.

(E) **DISPLAY LEAGUE TABLE:** This option is used to display the data currently in memory on screen in the form of a league table, but note that for a true representation, the data in memory must first be sorted into order using option 'C' as previously stated. If this option is selected without any data in memory, then ESCAPE must be pressed to exit. League tables are displayed on screen in the same way as the football league tables are shown on television, with the team names in a column on the left followed by columns of figures on the right hand side. Following the team names are the number of games the teams have played, the number of points the teams have accumulated, the number of goals the teams have scored against them and their overall goal difference. The league tables are displayed in four colour areas the clarity indicating the top or championship position is brown, the next three promotional positions is green, the relegation positions in red and the bottom of the table, the bottom three positions will always be shown in red because the relegation zone is entered accordingly and if necessary the remaining part of the screen below the relegation zone will be blanked out with the background colour. ESCAPE is pressed to exit back to the menu or 'P' is pressed to protect the league table using an Epson compatible printer. Because of the extra width available when using a printer, 80 columns as opposed to 40 columns on screen, extra data has been included in the program. When printed out, the league table includes the teams full home and away records, recording the total number of wins, draws and losses for both home and away matches.

(F) **ENTER RESULTS (UPDATED)** This option is used to update a league table by entering the relevant results, but if this option is selected with no data in memory, then ESCAPE must be pressed to exit. All the team names in the league are displayed on screen in their current league positions for reference, assuming of course that the data has previously been sorted into order using option 'C' as previously described. Entering the result (or the score) of a match is achieved by first entering the name of the 'home' team followed by the name of the 'away' team after which the result of the match is entered. The result is entered by pressing a numeral key 0 to 9, entering the home teams score first followed by the away teams score. When entering the team names, the names may be abbreviated in the first few letters if required, but be careful to match with the correct team, the full name will being passed on screen even if abbreviations are used. Normally only the first three or four letters need be entered, but it depends upon the names of the teams in the league and upon their league positions. To distinguish between Manchester Utd. and Manchester City will obviously require at least the first 12 letters to be entered. After entering the team names and the result, a prompt is given asking if the entered result is correct and if so 'Y' for Yes is pressed to enter the result or 'N' for No is pressed if the entry is in error. Upon pressing 'Y', the entered data is memory is updated and the two teams are marked on screen accordingly with an inverse 'H' or an inverse 'A' to signify home or away for reference is show that the results for the marked teams have been entered. Note that these marks are erased when exiting and are not replaced should this option be reselected. If when prompted, 'N' was pressed, then the two team names and the result are cleared and the current data in memory is not updated. Entering the results continues in this way until ESCAPE is pressed to exit but note that option 'C' must be used to sort the data into order before a new league table can be dis-

played or printed out by using option 'P' as previously described.

(G) **LIST FILE DIRECTORY** This option is used to list all the league table data files on the disk for reference. The program allows for up to ten files to be stored on disk and this option lists each one found on a single screen with each separated by a comma after which ESCAPE must be pressed to exit.

## USING THE PROGRAM

To clarify how to use the program, the first process before anything else can be achieved is to create a new blank league table using option 'F' and then save it to disk using option 'W'. Initially file 0 is best, used to start a blank file. Load the blank file using option 'W', then use option 'F' to update it, use option 'C' to sort the data into order and then use option 'P' to save it back to disk, use option 'F' to display the league table on screen and if necessary to print out the league table.

Unlike most programs, League Table has no limits to the values that the data can assume, neither and so theoretically the program can accept the current six-league system. Of course such large values will disrupt the screen display and the layout of the printed list it does lose the advantage of keeping the league table data accurate. If all the results of a particular football league such as the Carling Premiership are entered into the program, then at the end of the season as well as during the season, the program will produce an accurate representation of the actual league table. The only discrepancy may be when two or more teams have the same number of points and the same goal difference, but as the season progresses, this becomes a very rare occurrence.

## TECHNICAL DETAILS

### ALTERING THE SIZE OF THE PROMOTION AND RELEGATION ZONES

The size of the promotion and relegation colour zones on screen are fixed, but they could be altered if required. The size of the promotional green zone is established directly by calling up the relevant DLI routine within the display list at the 51st element of 0B on line 1849 which is an inverse COMB-TROL-0 character.

To increase the size of the promotion zone by one position, move the character one position down the string to the 51st position and replace the original 51st character position with a normal COMB-TROL-0 character. Alternatively to reduce the size of the promotion zone, move the character up the string.

The size of the relegation zone is established by a local FORK into the display list in page six within the DISPLAY program. The local FORK is referenced from the variable PLAM which is used to store the number of teams in a particular league so that the relegation zone always covers the last three positions no matter how many teams are actually in the league. 'FORK: 100H-PLAM, 120' found on line 0493 is used determine the size of the relegation zone and the corresponding 'FORK: 000H-PLAM, 900' to cancel the DLI call can be found on line 760. Note that both must FORK the same address. Using '1070H-PLAM' will increase the size of the relegation zone whilst '000H-PLAM' reduces the size.

If the size of the promotion and relegation zones are altered, then the position of the message 'PRINTING TABLE PLEASE WAIT' displayed when downloading the data to a printer will have to be considered accordingly. The relevant three lines of the league table are temporarily MOVED into 0B before they are overwritten on screen with the message after which they are MOVED back into the screen

RAM overwriting the message to restore the league table.

### THE THREE DISPLAY LISTS

The first of the three display lists is used for the program's menu and employs standard text modes. One line of mode one and three lines of mode zero are used for displaying the program title and eight lines of mode zero for the menu.

The second of the display lists is used for displaying the league tables on screen and is a normal mode zero display list with three extra lines added at the top of the screen, one line of mode one for the program title and two lines of mode zero for the league tables heading and its two option menus. This display list is located at the page six address of 1070. There are two variables at the top of the display list where the address of 0B (the extra lines screen RAM) is 0F000H. 0B is defined on line 1800.

The third display list defined on line 1070 is a normal mode zero display list but lined and with an extra mode one line at the top of the screen for displaying the program title. This display list is used for option 'F' to create new blank league tables and option 'P' to enter the results. This display list is located at the page six address of 1011 and it also contains two variables where the address of 0B is 0F000H, but only the first 20 bytes of 0B are displayed since this display list only contains a single extra mode one line.

### THE FIVE DLI AND THE ZONE COLOURS

The program uses five DLI routines solely to provide the colours for the four colour zones used when displaying the league tables. The five DLI routines are defined together as 0B on line 1000 and MOVED into page six following the display lists at address 1070.

The DLI routines are loaded with the relevant colour values using the standard locations 000 to 004 via the GATA statements at the end of the listing on line 1846. Since there

are only four colour scores in the league tables, only four GOAT statements have been included on line 1948 which makes changing the DATA easier when altering the colours. The fifth colour value of 146, the background colour is FORCED directly into location 594 which is used to blank out the unused area of the screen below the relegation zone when a league contains less than the maximum of 24 teams.

## THE VM ROUTINE

A small immediate VM routine is used to disable the attract mode, the CONTROL-1 stop-start toggle and to disable the lowercase and inverse characters meaning that the keyboard is always in the uppercase mode. The VM routine also resets the DLI vector register 512 to point to the first DLI routine to synthesise the screen colours with their respective scores when displaying league tables. The last DLI routine also resets the DLI vector register 512 so a backup should the VM routine be suspended during data transfer when downloading data to the printer. A deferred VM routine is often suspended during data transfer so an immediate VM routine has been employed instead. All this results in a much reduced screen flicker when printing out a league table. The VM routine is defined on VMSB on line 1876.

## USING A DIFFERENT PRINTER

The program was written for use with an Epson compatible printer but it may be modified to use any printer. The printer control codes may need to be altered accordingly and are to be found on lines 920 and 940.

For reference when changing the control codes, the league table should print out using normal case characters with the exception of the heading "LEAGUE TABLE" which should print using double width, single height characters in the centre of an A4 sheet at the top of the page. The only other deviation is that the league tables category heading between

the words "GO" and "DEF" (indicated) should be underlined.

## A STRANGE ENDPROC

An ENDPROC with nowhere to go in the real line 950 of the program listing, there is a strangely placed ENDPROC which can never be acted upon because it follows a GO TO GOH MODATA. This ENDPROC is simply being used to mark Turbo BASIC's indentation since there is no direct exit via an ENDPROC within the RESULTS procedure which can only exit via a POP command back to the menu from within the ENTER procedure. The ENDPROC is not an essential part of the listing but, without it, Turbo's indentation is 2 places indented for the rest of the listing which gives the incorrect impression that something is wrong within the listing which Turbo's indentation is supposed to identify.

# PROGRAM BREAKDOWN

## PROCEDURES

**HELP** Clears the help screen  
**CLR** Clears the menu marker  
**CONTINUE** Used with the CREATE procedure requiring "Y" or "N" to be pressed to continue  
**CREATE** Creates new blank league tables  
**DISPLAY** Displays the league tables on screen and downloads the data to a printer  
**ENTER** Controls the entering of team names  
**FILES** Reads the disk's directory and displays all data files found on screen including routine  
**GET** Gets a key press from the keyboard  
**KEY** Loads a data file from disk  
**LOAD** Loads the menu options when selected in inverse  
**MARK** For entering the individual results of the matches played  
**RESULTS** Saves a data file to disk  
**SAVE** Saves the data in memory into order  
**SCRT**

**SWAP** Used within the SCRT procedure to swap over adjacent team names and the respective data if the lower team has a greater number of points or when teams are on the same number of points, the better goal difference

## LINE LABELS

**MENU** Start of the menu  
**MODATA** Start of the NO DATA routine  
**SELECT** Start of the select from menu Routine

## STRINGS

**88** Defined with 16 spaces following an inverse space to arise team names when necessary and providing a new cursor  
**194** Defined as "LEAGUE DT" meaning league data where " " is the number selected when saving files to disk  
**18** Used in the ENTER procedure to store the data as a team's name is being entered  
**L08** Line (down), 40 Ctrl-B characters  
**L08** Line (up), 40 Ctrl-B characters  
**88** Dimensioned to 16 characters and normally used to identify team names from TS  
**194** Used when printing out league tables  
**19** Smallest string array for storing all the team names in a league  
**19** General purpose string  
**23** The screen RAM used for the write screen lines  
**23** Defined with zero characters (the heart) used for mixing text from the screen

## THE ARRAY

At(0,0) Where "V" (vertical) represents the number of teams in the league minus one, that is on a scale of 0 to 23 and where "H" (horizontal) represents the following league table data...

H=0 Games played  
H=1 Points accumulated  
H=2 Goals scored  
H=3 Goals scored against

H=4 Home wins  
H=5 Home draws  
H=6 Home defeats  
H=7 Away wins  
H=8 Away draws  
H=9 Away defeats

## VARIABLES

**AW** Identifies the away team  
**AWST** The away team's score  
**H8** Identifies the home team  
**H088** The home team's score  
**GENERAL** General purpose variables  
**NUM** Stores the number of teams in the current league  
**OPT** The menu option  
**SCR** The address of the screen RAM  
**OPEN(88)**  
**I** The address of 25 used when saving text from the screen

Many of the program's constants have been converted into variables to conserve memory. The values of these constant variables never change and are easily seen above they are preceded with the letter "V" thus V4-4, V5-5, V15-15, V18-18, etc.

# AND FINALLY ...

Please don't get the impression that I am interested in football after writing this program! My only interest in football is that I am a Wimbledon, born and brought-up in Wimbledon, a striker from Plough Lane, the original home of Wimbledon FC and my wife was born and brought up in Brentford, her father an ex-Brentford player.

# THE LISTING

The full listing can be found on this issue's disk, if you prefer to type in the listing a TYPESetted printed listing is available on request, see inside back cover for details.

# AUTOMATIC PROGRAMMING

**H S Wood**  
**demonstrates the**  
**unique Atari**  
**Return Key Mode**

**T**he ATARI 8 bit is capable of setting its own lines for a program and this technique can be very useful. I have included a simple example program called RETURNEM.DAS which has full REM's to instruct how the lines perform the 'magic'.

## METHOD

Basically one clears the screen, makes a program line a few lines down the screen and prints the word 'CONT' on the following line. The cursor is then moved above the line, and value 12 is printed into location 842. The 'STOP' command causes the program to stop and the cursor then moves down the screen to the printed line which is entered into memory. The cursor continues to the 'CONT' line and the computer resumes. Next the value 12 has to be put into location 842 and the program is again running normally. The END

command ends the run.

The value 12 in REG causes 'Find' from the screen instead of the keyboard' so that anything on the screen is input to the computer. This is mentioned in 'Mapping the Atari' and in 'Atari Programming Reference Guide' both of which are probably available but may be in leading Libraries for reference.

## PROGRAMS

If the program is made in 'LOOP' many lines can be produced and a good example of this is a routine called MCDATA.DAS which produces 'DATA' lines from a machine code program to memory. The example I have provided for making 'DATA' lines is a modified version of a 5 line program published in ATARI USER dated November 1989 and written by Jeff Davis.

My modifications are to make it easier to type the program (there is a lot of program for 5 lines) and also to allow memory addresses to be entered in either 'HEX' or 'DECIMAL'. HEX is usually easier to use when dealing with machine code.

To use MCDATA.DAS type 'RUN' and follow the prompts. The DATA lines made by the above program should be 'LIST'ed to disk so that the program itself is not included. Also MCDATA.DAS should be protected so that it does not get corrupted.

## DRAWING GRAPHS

A different program might draw graphs and then use a FORMULA. This formula can be on a single line and will be used every time the program is run. However if the formula is to be changed to draw a different graph the RETURN KEY MODE can be used to write the same line with a different formula.

I have a GRAPH drawing program which I call PUNCTUM which is included on this issue's disk. Check the program out to see how it works. When asked for 'C' values type -10 and 10. The formula already in the program is 'Y=3X-200'.

Basically a program might 'WAIT' from a file and if the filename has to be typed each time the program is 'RUN' it becomes tedious. Instead a message can be printed to ask 'Do you want to change the filename?'. Typing 'Y' will run again with the same filename while 'N' will ask for the new filename and the program will write a line with the new filename. This filename will continue to be used until 'Y' is typed again.

## OTHER USES FOR THIS TECHNIQUE

Other uses for this technique include deleting lines of a program after it has 'LOADED'. A long program which 'LOAD's a lot of machine code from DATA lines can have the DATA lines deleted after they have served their purpose thus taking up less room in memory. There are many more possibilities and Atari users will be able to think of plenty.

The MCDATA.DAS program can be found on the issue disk.

```

13 1 REM *****
13 2 REM 1 RETURN KEY MODE DEMO
14 3 REM 1 FOR NEW Atari USERS
15 4 REM 1 By H S WOOD
16 5 REM 1 APRIL 1990
17 6 REM *****
18 7 REM
19 10 REM 100 GET LINE No.=842
20 11 LINE=842
21 40 REM 11 CLAR SCREEN
22 50 20 ? "CONT"
23 60 REM 11 PRINT LINE No. at 10
24 70 REM 11 CORRECT PLACE ON SCREEN
25 75 POSITION 2,37 LINE;"DATA "
26 90 REM 100 PRINT ITEM SEPARATED
27 95 REM 100 BY COMMA'S
28 100 FOR I=1 TO 5
29 110 ? I
30 120 REM 11 CORRECT SEPARATE ITEM
31 130 REM 11 NO COMMA AFTER LAST ITEM
32 140 ? I
33 200 REM 100 NEW THE "TITLE"
34 210 REM 100 PRINT "CONT" ON LINE
35 220 REM 100 AFTER DATA LINE
36 230 ? "CONT"
37 240 REM 100 MOVE CURSOR TO TOP
38 250 REM 100 OF SCREEN
39 270 PRINT#100 I
40 280 REM 100 GET "RETURN KEY" MODE
41 290 MODE 842,13
42 295 REM 100 STOP THE PROGRAM
43 300 STOP
44 310 REM 100 RETURN "NORMAL MODE"
45 320 MODE 842,13
46 270 REM 100 CLAR THE SCREEN
47 330 ? "GRAPH"
48 340 REM 100 LIST NEW LINE AND END
49 350 LIST 1000:END

```

Insertion - MODE CHARACTER - [ ] - CONTROL CHARACTER - ~ - INVERSE CONTROL CHARACTER



# A SHORT HISTORY OF COMPUTERS

## A FUTURA Update by Austin Hillman

**T**he electronic stored program computer is fifty years old this year. As you may know, the prototype of all modern computers "Baby" has been reconstructed in time for its anniversary on 23rd June 1958. But what came before it, and what came after?

## EARLY CALCULATORS

The first calculating machine to said to have been built by Wilhelm Schickard around 1623, but it was later destroyed in a fire. Luckily, he described its workings in correspondence with Johannes Kepler, thus enabling a reconstruction to be made of his Calculating Clock. This consisted of a version of Napier's Bones, for multiplication, sitting on top of the mechanical device which carried out addition and subtraction.

Blaise Pascal created 'The Pascaline' mecha-

nical calculator in 1642, to aid his father who was a tax collector. It was a nine ten stand device that could add, subtract, divide and multiply, but it was mechanically unreliable so only a dozen or so were made, none of which still exist.

In the 1670's Gottfried von Leibnitz created a major improvement in the mechanism of calculators with the invention of the Leibnitz Wheel which speeded multiplication. Sadly, his own calculator, the Stepped Reckoner, was apparently never perfected, as the only surviving version is incomplete.

## COMMERCIAL PRODUCTION

The first commercially produced calculator using the Leibnitz Wheel, The Arithmometer, was created by Charles Xavier Thomas De Colmar for use in his insurance company. It appeared in 1820, and around 1500 examples were sold over the next thirty years or so thanks to the new demands of the industrial revolution.

The most famous name in mechanical calculator design is of course Charles Babbage. He designed his Difference Engine in 1821, in order to compute logarithm tables. Unfortunately its complexity defied the engineering

of the day and it was abandoned in 1842.

However, in Sweden, Edward Scheutz managed to build a working Difference Engine in 1842, based on the work of his father, Peter. He built another in 1854 but found little demand for this remarkably device.

Undeterred, Babbage next designed the Analytical Engine in association with Augusta Ada, Lady Lovelace. This was to be the worlds first programmable calculator. The machine had an input where numbers were entered on punch cards, an idea borrowed from the Jacquard loom. The store held the numbers as required. The card performed the arithmetic. The output printed the answer. The control unit was programmable for the type of calculation by punch card. Many different designs were drawn up over the years but the machine itself was never built.

In 1880, Dave K. Peis developed a calculator that was operated only by the action of pressing the keys. It was called the Comptometer, and was advertised as 'the machine-gun of the office' in order to emphasize the speed of operation.

In 1890, William S. Burroughs patented his Adding and Listing Machine which also used a keyboard. It was not key driven, but it was the first to produce a print out of the results. It became a best seller.

The American version of 1890 was processed by a punch card calculator created by Herman Holstede, who joined with others to create the

company which would become International Business Machines (IBM) in 1911.

## ENTER ELECTRONICS

In 1906, Dr. Vannevar Bush of the Massachusetts Institute of Technology produced a *Differential Analyzer*, based on a paper written by Lord Kelvin in 1876. Copies of this device were built at several universities, including a Moorse version built at Manchester in 1936. It was an electro-mechanical analog computer designed to solve differential equations, but it was still basically just a calculator, albeit a powerful one. However things were about to change.

In 1907, the brilliant mathematician Dr. Alan Turing published his paper 'On Computable Numbers with an Application to the Entscheidungsproblem'. This paper lay out the theoretical concept of a machine that we now call a computer. All that was needed was someone to build a practical device.

Research mathematician George Stibitz created his Model K the *Relay Computer* in 1947. This was a device using relays that could add binary numbers. Developing the idea at Bell Labs, his Complex Number Calculator was completed in 1936. Bell was not

Wilhelm Schickard's first calculating machine  
c.1623

1623

Leibnitz Wheel

1679

very interested in developing it, but the U.S. Army was, they took delivery of five relay computers for ballistic computations. This stage reached its peak with the ENIAC in 1946, although research continued into the 1950's.

Meanwhile in Germany, engineering student Konrad Zuse began work on a binary computer in 1936, to aid his work at Henschel Aircraft. The Z3 was a mechanical demonstration model using switches and relays. The Z2, completed in 1939, used relays. Military funding for a code-breaking model was refused in 1942. Continuing to work almost unnoticed, Zuse and colleague Helmut Schreyer, built the Z4 in 1943. This used 3600 relays and was controlled by instructions on punch tape. The partly electronic Z4 was completed in 1945. His company, Zuse AG, founded in 1948 would form the basis of the German computer industry, becoming part of Siemens in 1967.

Back in America, Harvard engineer Howard Aiken had designed a relay computer, based on the ideas of Babbage, in 1937. He persuaded IBM to build the Harvard Mark I Automatic Sequence Controlled Calculator in 1939. It was finally completed in 1944. The Mark II arrived in 1947. The Mark III in 1948 and Mark IV in 1952. These relay computers were large, expensive, and only ran three or four times as fast as a mechanical calculator, but they were reliable and could work 24 hours a day.

## A 30 TON COMPUTER!

During the war American war departments for accurate ballistic tables, Physics Professor

John Mauchly proposed an electronic computer in 1942 but it was not until April 1943 the Army sanctioned the building of the Electronic Numerical Integrator Analyzer and Computer - ENIAC. It finally entered service in February 1946. It was a huge device containing 18000 valves and weighing 30 tons. It could handle numbers of up to 23 digits and hold 10 of these numbers in its store. It was also very fast, up to 5000 calculations per second.

It had been thought that ENIAC was the first electronic programmable computer. However the UK government revealed in October 1975 that an electronic computer, code name Colossus, was operational at Bletchley Park in December 1943, and that two coils were operational at the end of the war. They replaced relay based machines that had been used from 1941. These 1500 valve coils breaking machines were built by Professor M.H.A. Newman and T.H. Flowers, based on the ideas of Alan Turing. Development was continued on the Colossus design at the Paper and Telecommunications Research Establishment until 1952.

Work began on the successor to ENIAC, the Electronic Discrete Variable Automatic Calculator - EDVAC, in 1946. It was eventually completed in 1951, as in the meantime John Mauchly and J.P. Eckert had left the project to form their own computer company. After leaving ENIAC for Remington Rand in 1948, they produced a commercial computer, UNIVAC I, in 1951, the first to use magnetic tape for storage of data. Remington Rand bought the company in 1952 and sold 48 units, the last of which was turned off in 1970.

Mathematician John von Neumann had worked with Alan Turing in the late 20's. He published an influential paper on the design

Babbage's Difference Engine  
The Antikythera

Edward Scheer's  
Difference Engine

1820 1822

1842

of a stored program computer in 1946. After working on EDVAC he created the UN computer at the Institute of Advanced Studies at Princeton in 1952. This machine was to heavily influence future computer design.

At the National Physics Laboratory, Turing designed the very powerful Automatic Computing Engine - ACE, before joining the Manchester University team in 1948. ACE was eventually built in 1957 after the first ambitious Pilot ACE had been constructed. This was to form the basis for the English Electric range of commercial computers.

## THE FIRST REAL COMPUTER

The first stored program computer was developed at the Manchester University M1 'Baby', created by Professor Frederic Williams and Doctor Tom Kilburn. This 600 valve unit, capable of processing 800 instructions per second, used a memory device known as a 'Williams tube'. This was basically a cathode ray tube adapted to store 128 bits of information. The Manchester team later collaborated with others to produce a commercial version, the Ferranti M1 in 1951, which led to the Program of 1958. Followed by the Mercury and then the Atlas, the fastest computer available in 1962.

Cambridge University produced EDSAC - Electronic Delayed Storage Automatic Calculator, a scaled down version of EDVAC, in 1949. The Cambridge team also assisted with the design of the Lyons Electronic Office, a massive 6000 valve unit, whose 'memory' was a collection of memory tubes weighing half a

ton. This was developed into the LEO 1 commercial computer in 1954. Leo Computers Limited built about 100 units and became part of English Electric in 1958.

Bathurst College produced experimental models based on the B2 design, which was the inspiration of the commercial units made by the British Tabulating Machine Co., now known as International Computers Limited.

The mighty ERM despite building the Harvard computers was not really interested in this area until it was approached by the US government. It built the IBM 701, based on the UN design, in 1953. It was surprised to get 18 orders for this model. Now convinced there was a demand for computers, the IBM 702 and 704 were launched in 1955 for commercial use.

## FIRST USE OF TRANSISTORS

Transistors, invented in 1947, were first used in the US-O Transistor experimental computer built at MIT in 1956. They finally supplanted the mighty valve in the IBM 7090 series of 1959.

Integrated circuits, created in 1958, first appeared in the IBM System/360 range of 1964. The BASIC programming language was invented by John Kemeny and Thomas Kurtz that year.

The Intel Corporation, founded in 1968, pioneered the development of memory chips. And it was here that Marvin E. Hoff produced the first microprocessor, the 4004 is 4-bit processor (intended for use in a pocket calculator), in 1971.

Computer Building and Using Machine

IBM founded

1960 1970

1971

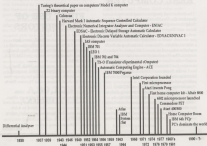
## THE HOME COMPUTER

The first home computer was the Altair 8800, launched as a kit in December 1974, by Micro Instrumentation and Telemetry Systems. It used the Intel 8080 eight-bit microprocessor (1972) and had a microscale 500 bytes of ram to work with. Essentially a large box with some switches and pretty lights on the front it could do very little. It cost \$395.

In 1979 the 6800 microprocessor was launched by MOS Technology (based on the Motorola 6800 of 1974) and used in their IBM 1 (Keyboard Input Monitor) 1 kit computer. The success of this crude device surprisingly

encouraged Commodore to launch the PET (Personal Electronic Transactor) in June 1977.

The home computer boom was now just around the corner. The Atari 400 and 800 would soon arrive to do battle with a flood of others that came and went in the 80's. But it's proved to be best as the Sinclair range now of allcomers. Including the Japanese with their compatible MSX models. The IBM 515 PCjr of 1981 initially seemed to be another failure but after a slow start the PC and its many clones have emerged as the winners of the hardware battle—at least for now.



Page 6's New About User

## XL/XE PROGRAMMING

# TEST CARD

John Foskett helps you set up your TV for the perfect picture

## POOR QUALITY PICTURES

It is really amazing how so many people put up with poor quality pictures when watching television, but much of the time they are unaware of the problem simply because the quality of a picture deteriorates very slowly. It is extremely difficult to notice misalignment when watching normal television pictures, but the problems show up clearly when using a test card or a pattern generator.

## USING THE PROGRAM

The Test Card program provides a grid of horizontal and vertical lines which are evenly spaced with a large circle in the centre. This is used to ensure a good linear display such that the lines are evenly spaced over the entire screen both horizontally and vertically and also that the circle is circular and not elliptical in any way. The lines should appear straight without any curvature or kinks. Within some of the boxes formed by the grid and spread evenly over the screen are small

The test card utility program was written as an aid for television and monitor alignment to ensure that they give the best possible display. This program, a test card or any pattern generating component is used to provide a standard image on screen to give a visual indication when setting up the internal adjustments of a television set or a monitor.

## CAUTION!

At this point a cautionary note is necessary. Television and monitor alignment is a skilled job which should NEVER be attempted without prior knowledge. Such equipment contains very high voltages which can be dangerous so ALWAYS be careful. Remember at all times that electricity cannot be seen, heard, tasted or smelled, it can only be felt and even this it might be too late, so treat electricity with the respect it deserves!

```

PM 38 REM *****
39 38 REM 1. THE TURBO TEST DRO 1
40 38 REM 1. FOR MONITOR 4.1396000 1
41 40 38 REM 1 WRITTEN BY JOHN FOSKETT 1
42 40 38 REM 1 ----- 1
43 40 38 REM 1 NOW START USER - 1990 1
44 40 38 REM *****
45 40 38 REM *****
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100 40 38 REM *****

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TO 214PLOT 14,2000000 14,1000000
JNDOT 1
C1 214 FOR 1=10 TO 214 STEP 40:FOR J=0 TO 1
0 104 STEP 40:PLOT 1,1,PLOT 14,1,1,PLOT
1,1,1,1,PLOT 14,1,1,1,PLOT 14,1,1,1
JNDOT 1
Y5 214 FOR 1=10 TO 140:FOR J=10 TO 140:1
SOLE 1,1,J,1,JNDOT JNDOT 1
U4 214 REM Print Test
M4 240 TEST 40,30,"THE TURBO TEST 340,30
","TEST DRO"JNDOT 14,104,"JOHN FOSKETT
","TEST 215,104,"FOSKETT 1997"
R5 250 REM Test On PMG
C1 240 PLOT 250,10,RESTORE 250:FOR 1=0 TO 1
0 120:FOR J=1000 22000+1,JNDOT 1:FOR 1
10,200,104,100
Y5 270 REM Options
C1 280 00 1-PH=150000:IF 1=4:20+20+
16:IF 10:100+100+100+100+100+100+100+100
10:1000 10:1000
M4 290 IF 1=0: THEN COLOUR=0:COLOUR
J0 300 IF 1=1: THEN J=2:FOR 1=0 TO 10:J
1=2:1000 100+1,J,POR 400+1,JNDOT 1
M1 310 IF 1000:700+1: THEN PLOT 700,10:10
100+100+100+100+100+100+100+100+100
10
M4 320 1000
J0 330 ---
M4 340 REM Load Colors
C1 350 PLOT COLOUR=COL:FOR 1=0 TO 10:1
1=2:1000 200+1,J,POR 40+1,JNDOT 1
1000PLOT
J0 360 ---
M4 370 REM Set Data
C1 380 DATA 70,120,70,140,200,200,200,100
,70,1,14,10,200,100,0,0,140,21,200,1
84,170,104,14
M4 390 REM Set Data
C1 400 DATA 70,160,4,100,77,100,200,104,7
4,120,104
LX 410 DATA 70,160,4,100,77,100,200,104,7
4,120,104

```

Symbol = INVERSE CHARACTER · [ ] = CONTROL CHARACTER \* = INVERSE CONTROL CHARACTER

## XL/XE PROGRAMMING

# PMG PROGRAMMING TIPS

by John Fosskett

When using PMG's, it is normal practice to leave RAMTOP at its default value of 1024 bytes. This will allow you a whole 7 pages of extra free RAM. It then follows that if you use 3 players in a program, using PLAYERS 3 and 5 will save 6 pages of RAM, etc.

Alternatively, you don't have to leave RAMTOP at its default value for any data for that matter! you could allow RAMTOP to crash into the data area if you wish. The great advantage in doing this is that you will immediately notice when you have used up all of the available RAM since it will show up as an error or rubbish in the PMG output. But you must however define your PMG shapes early in a program before defining strings otherwise the PMG's will overwrite the strings instead. Not leaving RAMTOP at its default value will avoid the "Out of Memory" error 3 from occurring which can cause a crash. Loops and information need RAM in which to function and if no free RAM is available for this, then such errors can occur when a program is run causing a crash and therefore the loss of your program.

RAMTOP=PEEK(100+PLOT  
100, RAMTOP-8,PAGE=RAMTOP-8

If you leave RAMTOP at its default value of 1024 bytes and you are not using the monitor, then you have 4 pages of protected RAM immediately below the player shape data (see for you, then) for storing a whole set of undisturbed character set.

If you are only using one player in a program, then use PLAYERS 3, the highest in RAM so that you only need to protect a single page of

## TEST CARD continued

spots which are used to ensure accurate focusing, all the spots as well as the rest of the screen should appear clear and sharp. It is much easier to set the focus by using small spots rather than by using lines. Initially in the center of the screen is a grey scale from black to white which is used to set up the brightness and contrast adjustments and the colour balance to give the full range of greys without any colour tinge. Pressing STAY will slowly cycle through the colours giving colour scales to ensure a good colour range and balance. Pressing OPTION returns the grey

scales and pressing SELECT displays a range of colours at a mid-brightness setting. Pressing HOLD toggles the background colour from the initial black to the normal Atari blue which more easily shows up the flyback lines and also testing interlacing. When blue, the screen should be clear without any background roughness or flyback visible. At the sides of the screen are two vertical strips to aid the horizontal and vertical positioning of the display within the boundaries of the screen to ensure a perfectly centered picture.

# HEY! HEY!

## It's The TIPSTER

This issue our regular Tipster James Macfarlane, concentrates on some Public Domain adventures available from the Page 5 Library. There are hundreds if not thousands of TD games available of all kinds so how about some hints and tips for those for future issues? The future is here, it may not be orange but it could be TD!

## LIVINGSTONE

Page 5 Adventure Set #1 Disk 1A  
Page 5 Library disk #50

The mapping system for the game is unusually complicated, and detours from the game, however there is a system to it - you will need to be patient and perceptive with this game. Some hints to help you on your way:

In the bedroom, near the basin and the lamp, open the book, read the book in bed, and type **DRIFT**.

Should you find your path blocked by spikes, read, merely **JUMP QUICKERAND**.

Click the mouse in your knapsack, then free the mouse when confronted by the leopard. When you have the diamond, if you **RAT SWAMI** you will find yourself back in your room.

Click the viper, and free it near the dog. The viper is in the tree.

You may find yourself trading with the natives, however, do not take the spear into the native village - the natives will take it as being a threat.

Maybe someone could come up with a map or a complete solution - I really had enthusiasm for this game because of the mapping system. A Tipster challenge maybe!

## DUNGEON OF THE GODS

Page 5 Adventure Set #1 Disk 1B  
Page 5 Library disk #50

The aim of the Game is to escape from the Dungeons of the Gods - there are some hints and tips to complete the game, in no particular order:

**OPEN BOX** in the first room where building the bar

**POTION 1** and **POTION 2** will make you either weaker or stronger - use carefully

**DRINK** the copper COIN when in the castle

**WARD 8** will shoot lightning bolts, use it against the silver, but not the black dragon

To use the magic dust, **WAVE DUST**

Use the **LANCE** against the **BLACK DRAGON**, and the **FLAMING SWORD** against the **BLACK CUBE**

Collect the **PLATINUM BAR**, the **DIAMONDS**, and the **CREST OF THE GODS** before you escape for maximum points

**READ** the **SCROLL** at the **RED DRAGON**

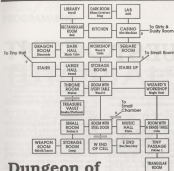
**THROW** the **BALL** at the **SCALTER**

**POUR** the **ACID** at the entrance

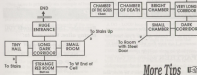
**WAVE WARD 2** at the **STEEL DOOR**

**PUSH BUTTON** in the **STRANGE BED ROOM** to get to the west end of a prison cell

## NO PROBLEM!



## Dungeon of the Gods



More Tips





```

80 1 ROM *****
81 2 ROM STURBO BASIC - TEXT PLOTTER
82 3 ROM 1   by Steve Moran
83 4 ROM 1 *****
84 5 ROM 1  ROM ADAPT EG2 - 1980
85 6 ROM *****
86 7 ROM
87 8 EXEC SET_UP
88 9
89 10
91 11 EXEC CHECK_SCREEN
92 12
93 13 IF PEEK(1640) < 0 THEN SET KEY
94 14
95 15 IF KEY=48
96 16
97 17 EXEC LOAD_FILE
98 18
99 19 EXEC SAVE_FILE
100 20
101 21 IF KEY=47 AND KEY=52 THEN CURSOR
    =KEY-48
102 22
103 23 EXEC
104 24 POKE 164,255,EXECUT
105 25
106 26 LOOP
107 27 --
108 28 PROC PLOT_CURSOR
109 29 LOCATE XPOS,YPOS,PIXEL:LOCATE XPOS
    +7,YPOS,PIXEL:LOCATE XPOS,XPOS+7,YPOS
    :LOCATE XPOS+7,YPOS+7,PIXEL
110 30 COLOR CURSOR:PLUT XPOS,YPOS:PLUT X
    POS+7,YPOS:PLUT XPOS,YPOS+7:PLUT XPOS+
    7,YPOS+7
111 31 LOCATE LX+YPOS
112 32
113 33
114 34
115 35 --
116 36 PROC LOAD_FILE
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```

Include: +XPOS+CHARACTER+ | ] =CONTROL+CHARACTER+ \* =INVERSE CONTROL+CHARACTER

GET without creating an OPEN and the way CLS 40 is used to clear the screen. Please don't LOAD-FILE and SAVE-FILE use the GETSET and INPUT commands to read/write the screen data from/to disk - much faster than machine code GOTO calls and much quicker than the usual PUT/GET method. Procedure CHECK-STOP uses the binary manipulation facilities of Turbo Basic in conjunction with a little boolean algebra. Note the use of the XOR(XOR(SCREEN,0)) and "if binary AND" commands to read the stick directly. The result is a compact, quick method of joystick reading. PB. Touch tablet, users may wish to change the code to read SCREEN() in order to use the second joystick port to avoid having to swap the tablet and the joystick. PLUT+CHARACTER uses the TEXT command to plot the text out to the graphics screen - another useful Turbo Basic command.

Well, that's about it. Because this program was written within the constraints of having to fit in a page, there are quite a few features missing. How about a P/B cursor (could be controlled using MOVE command), memory test (again using MOVE command), RAM-DISK support on 160K or 320K RAMs, multiple fonts and different text directions? Then the excellent PCCLASMS code posted to issue 20 could be added in order to enable direct loading and saving of Atari ALTIRIS screens. And of course, the program can then be compiled for even more speed!

## MINI CHARACTER SET EDITOR

This program is a little too long to include in

the magazine so you will find it on the lower disk. I have not written a full set of documentation, however three different small short instructions on how to use the program.

When the program is RUN, a status line at the top left hand corner of the screen informs you of the ASCII no. internal no and actual character being edited. Below there is a character grid showing the character which you are editing. A lit square on the grid represents a lit pixel in the character and a dot represents an unlit pixel. To the right of this is a large representation of how the character looked before you started editing it. Moving the joystick will cause a star shaped cursor to move around the grid. Pressing the fire button will toggle the pixel under the cursor either on or off. A list of commands is shown below and these are selected by typing the key which is highlighted in inverse text. Commands are Load - loads a character set off disk. This set MUST be called CHSET.PNT. Getchar (ASCII) - allows you to type the ASCII number of the character which you wish to edit. e.g. 65 will get 'A' to be edited on the grid. Getchar P/B key - allows you to get a character by editing by typing its equivalent key on the keyboard. e.g. typing 'H' in this option will bring the character 'H' up for editing. Putchar - puts the character being edited back into the set. This must be done in order to permanently change the character as the character is edited in a separate buffer. Default - Restores the character set to its default internal state.

This program hopefully demonstrates how Turbo Basic simplifies programming complicated tasks and how its increased power allows shorter code to be written.



# DISK DIRECTORY MOVER

## VERSION II

by John Foskett

In response to a letter from Jaume Asensio in *Building of Issue 80* which made a few suggestions for updating my *Disk Directory Mover* published in *Issue 78*, I present *Disk Directory Mover Version II*. In his letter, Jaume suggested that there should be a means of going direct to the menu bypassing the formatting stage so that all the files do not have to be copied in one session. Jaume also suggested that there should be a means of linking the directories of both the standard disk and the modified disk from the menu.

For a full explanation of the *Disk Directory Mover*, please read this article in conjunction with the associated article published in *Issue 78* of *New Atari User*.

### DIRECT MENU ACCESS

Direct access to the menu bypassing the formatting stage presented one major problem, that of remembering the position that the directory had been moved to. Obviously, the new directory position must be entered somewhere before the menu can be accessed so that the program can be set up correctly to visit a previously modified disk. Entering this via the keyboard either from one memory or from another could prove error prone because it is so easy to make mistakes. Some means of achieving this reliably was necessary and in this end, a disk menu file was chosen.

To access the menu directly, a prompt is given the TAB key is given from the initial screen along with the directory positioning options. After the TAB key has been pressed, the data file is read and only if found on the disk currently in the drive will direct access to the menu be enabled. If the file is not found, then an error will result and *OPTION* must be pressed to exit denying direct menu access.

After a disk has been formatted and prepared by the program, a prompt is given to insert a standard (journal directory position) disk into the drive to receive the data file *DISKMOVE.DAT* which records the position that the directory has been moved to. To access the menu directly on a subsequent occasion, it is then only a matter of running the program with the disk containing the previously written data file in the drive.

The data file *DISKMOVE.DAT* is used to record 2 pieces of information. Firstly the new directory position and secondly the format directory of the modified disk for information purposes on the menu screen.

### LISTING THE DIRECTORIES

The menu of the original version of the *Disk Directory Mover* had the options to look/track files and to write with or without verify as

options 7 and 8. These have been moved to options 3 and 5 respectively in version II. Option 7 is now used for directory access. Upon selecting option 7, a menu is presented from which "D" is pressed to list the directory of a standard disk and "M" is pressed to list the directory of the modified disk. That of course, the appropriate disk must be in the drive otherwise data (troubles) will be displayed instead.

The directory is displayed in 2 columns of 16 file names per column over 2 screens displaying if necessary all 64 file names. If the directory contains 64 file names or less, then only a single screen is required and *OPTION* is pressed to exit. If the directory contains more than 64 file names, then a second screen is necessary and *START* is pressed to list the remainder of the directory on the second screen or *OPTION* is pressed to exit.

### OTHER MAJOR CHANGES

The initial screen has been slightly altered and the *VDI* routine has been modified to flash the arrow used to select the new directory position and to flash the data copy cursor. The program now checks the disk's *VTDC* sector(s) before writing the *DISKMOVE*

file. In the original version after pressing *ESCAPE/OPTION* to exit from the menu back to the initial screen, "D" had to be pressed to modify the request since it was not possible to re-enter the menu. Exiting is now achieved directly upon pressing *ESCAPE/OPTION*.

### USING THE PROGRAM

A master disk should be prepared for the *Disk Directory Mover* as stated in the original article published in *Issue 78*. To avoid confusion when copying files over more than one session, it is recommended that the standard disks are kept in pairs, that is the modified disk should be kept with the standard disk which contains the files to be copied. The standard disk should also contain the data file *DISKMOVE.DAT* written to it during the preparation of the modified disk. In this way, several modified disks could be prepared and have files copied to them in the same session without confusion.

### A WORD OF WARNING!

Do NOT select option 8 from the menu to look/track files if a standard directory disk is in the drive since it could corrupt the disk data. This option writes into the second directory position to look/track files which could be in data sectors of a standard disk. The *Disk Directory Mover* has no way of determining whether the disk in the drive is a standard disk or a modified disk so please be careful. \*

The *Disk Directory Mover* program can be found on the *Issue 80* disk.

# USER vs PROGRAMMER

**Joel Goodwin**  
discusses the ways  
in which the user  
might see things  
differently to the  
programmer

**T**he programmer normally enjoys a close relationship with the computer. This, of course, is essential if the programmer is to get the best out of the hardware. The user, however, is instinctively distanced from this relationship and can get well and truly left out in the cold. What might appeal to the programmer may not suit the user so well. The user looks for convenience and practicality, while the programmer looks for internal efficiency and elegance.

Above all, the computer must communicate effectively with the user and if a program is not written to achieve this then all of the work invested in it can be wasted. This article is about designing software for ordinary people who are often confused or ignored during the creation of a program.

## WELCOME TO THE MACHINE

Just to demonstrate how important design can be, consider a few examples. Do you prefer a text screen with keyboard input or a windows system driven by a mouse? Are you well-schooled about BASIC giving you the error message 'LINE 100: UNDEF' or would you prefer 'Disk Full'? Do you really enjoy learning CTRL key commands for utilities such as Trexpar? Is a blank screen, representing an error, your polite 'Please Wait - Incoming' message?

The subject being discussed here has many names. A common term is 'user-friendliness'. Dr Dr Atari has a wonderful appellation as it called 'Human Engineering'. A modern term is 'Human-Computer Interaction' (HCI). Whatever name you care to use, it is something that should always be considered when writing programs. There are, unfortunately, no hard and fast rules about the best way to design software, as Dr Dr Atari puts it, it is 'an art, not a science'. The aim of this article is not to supply answers but to encourage programmers to ask themselves questions about what the user really wants. We'll discuss some topics and examples to illustrate the types of problems and the solutions that exist.

## THE LEARNING CURVE

What is the first thing you do when you get a new piece of software? Naturally, you would probably just throw in the new cassette/tape and load it - only later if necessary would you look at the instructions. Everyone has an in-built knowledge of resources, so a program will be more successful in a user's eyes if it is designed to minimise the importance of a manual.

Software, to some extent, should maintain independence from the manual. A program should be able to load, if not teach, a user. If a program forces a user to read the screen-jumping instructions, the user will become disenchanted with the program from square one. How is this avoided? There is no single answer, but it would seem sensible to design a program which keeps the user well-informed at all times. What options are available? What exactly do they do? When does it occur, what does it mean and how do you remedy it?

The problem with this is that the computer does not possess an infinite memory capacity to which to store huge quantities of information text messages. What is important is a balance. On the DOS 3.3 screen, the option 'A, DIRK

DIRECTORY' is sufficient. I don't need Press 'W' to call up the disk directory, which is a list of files on the disk currently located in the specified drive. Too much information can be as bad as too little. It can impede progress as the user cannot isolate the key points. A 'HELP' function can assist in allowing the user to control the level of information being received.

The faster the user can pick up a program, the more the user will like it. Although communicating with the user is very important it is not the only factor which can affect the learning curve associated with a program. Consider the method of requesting or inputting data in a utility program. If you keep a consistent approach to input (e.g. all input is through a screen controlled by joystick) then the user always knows what to do. An inconsistent approach can confuse. I have seen many a program which has some screens which act on a single keypress and others which require RETURN to be pressed after the letter. It is all very well telling the user to press RETURN, but why should the user have to? A single screen calibration can be useful here. (Note Dr Dr Atari advises that the keyboard should only be used as an input device if unavoidable, e.g. filename entry.)

## CLARITY

Graphics can be a burden as much as a blessing. Interactive graphics may simply turn out to be clutter where the essential details are not highlighted, or worse, are obscured. Colours, symbols and animation can all enhance the display but can also be taken to avoid confusion. I recall Clayton Walnum write in ANALOG magazine about an occasion where he had used character set cycling to

produce pulsating riffs around the display of a text adventure. He'd showed over the machine and graphics for some time. Once it was working, he showed it to someone else with, if memory serves) and he was told that it looked very nice...and it was disgusting. Eventually he realized that he had to take the animation out. It was ruining a fine text adventure (Clapton did go on to write an ANALOG article called "Visually Graphical" on the same subject as this article).

Something that is hard to come to terms with is the need to remove a perfect piece of code purely because it doesn't look right. It is worth it, believe me. An overuse of graphical variety will just look like a uniformity of choice.

Sometimes simplicity is the best approach. A nice example is John Puskett's "Second Selection" (PAW issue 76) which features little more than a screen full of text. However, the program slightly modifies the display list and uses DDA to stretch the screen and this makes very well. Not only does it increase clarity, but it brings life to what could easily have been a dull text display.

Symbols are good to use if there is some natural connection between the symbol and its meaning. For instance, a pair of scissors can be used to represent a 'cut' option. A shield icon can be used to label a list of shield energy in a game. Whenever devising a set of symbols to represent concepts or objects, try to develop symbols which mean natural, something anyone could understand - or at least, within the general context of the program. Think how you might express the following:

- i) Move
- ii) Time
- iii) Eat
- iv) Money
- v) Run

Of these, (v) is probably the most difficult. There doesn't appear to be a natural symbol which attached to it. Something more innovative would be required, one way of expressing it would be to have a disk with an arrow pointing to it. Note that this symbol is sickly dependent on context.

The last thing I'll mention in this section is character sets. Make sure that the set you use for text is easy to read. I have a copy of "Lemmings II" for the Mega Mega Drive II which has no spaces for my money (and the text list it uses is appalling. 'C' looks like 'G', 'M' like 'W' and 'Y' like 'J'). This text is used to display passwords which are 20 letters long and cannot be found in any dictionary I know of. Make me mistake nothing down the password and the whole thing is brutal. This list does not make me very happy.

## THE FRUSTRATION FACTOR

Playing with Lemmings II, there is a 'Make option you can activate if you feel you cannot complete the level. The more the easier, with a maximum of 1000 and games the better. This is good for safety. However, you then have to wait for the noisy single beeping to explode, each with a 3-second timer on their head. How pretty and wonderful... the first time. After that, it becomes annoying. Do you get used to hitting the 'Fast Forward' icon, which speeds things along. But this means every time I need to restart the level, which I need to do a lot, I have to press the button three times with a bit of joystick movement in the middle to change icons - and I still have to wait a short while. When there are 50 lemmings on the screen in explosion, things tend to slow down a little. Forcing this upon me every



single time really puts me off playing. Many other games have the same problem: why should I have to wait for the death march to play? Or for the ambulances to come out? Or for the car to explode into many beautiful pieces beeping around the screen? All I want to do is get on with my next go. Any programmer's idea of fun is not welcome when it strongly interferes with gameplay. Repetition in this way can kill a promising program from the outset.

An extremely common problem is the delayed temporary text message. That is, text which appears and takes either too long to disappear or disappears too early and you missed half of it (thanks the Cheat Sheet on ITV for a demonstration of this, especially as those messages disappear from the END first). Unless it's a message of five words, my advice is always use a prompt. Never try to estimate how long the user will need to read a mass of text; just use 'PRESS SPACE BAR TO CONTINUE' or something in that vein. For the same reason, I detest long scrolling messages - I could quite easily read a large page of text which would be a lot quicker with a bit less repetition. Yes, I am the Victor Meldrew of the computer world.

There are indirect examples of communicating too much to the user, or at least too slowly. Problems of frustration are not always of this type, though. Most of this article has revolved about the communication of information between user and computer. Games, especially, suffer from problems unrelated to information per se. There are many games, for example, which need a character to be positioned in EXACTLY the right place to jump a hole and not crash into something on the other side. One plant off and I'm dead. This is not good gameplay. This is failure.

Let me describe to you a problem I have had to deal with and how I resolved it. When I wrote the Citadel (S&A issue 74) disk format I



faced the problem of what speed to give the player's character. The character jumps from position to position; an aim jump too many can ruin the player's progress, jumping the correct time delay between moves/jumps was important. However, a puzzle game like the Citadel attracts a variety of players; some will have several game backgrounds adept at joystick use, others will be into more cerebral games which are not demanding in terms of joystick reactions. The former will like a fast speed, the latter a slow speed. In a single game speed would not suffice - it was clear that I had to supply a speed option on the title screen.

Orson (S&A issue 71) faced a similar problem but it is not so pronounced. In Orson, the character can be seen to walk from one position to the next, and then's jump. This allows the player to gauge when to release the joystick and a speed setting is not necessary. However, the story does not end here. I have since realised what the ideal solution is which would any effort on the part of the player - a joystick interface which prevents continuous movement. That is, if the joystick is pushed left then the character would move left UNTIL. The player needs to return the stick to neutral then push left again to move the character another step. This totally eradicates the movement problem: the character automatically moves at whatever speed the player is capable of. This solution requires most work from both the Citadel and Orson implementers there but it would be better by far.

## CLOSING NUMBER

There is an awful lot to consider when designing a program. I've tried highlighting some areas, even discussed some specific problems, but this subject is just too large to

## SUPERCIRCLES continued

needed. Also, the information could probably be extended to become a "superellipse" calculation.

Perhaps this isn't an "optimum" method and someone else has a better idea, which relies only on integers perhaps. If so, please write to NALL. I'd love to hear of it.

## MATHEMATICS!

The equation of a circle about the point (x0, y0) with radius r is given by:

$$(x - x_0)^2 + (y - y_0)^2 = r^2$$

Differentiating this equation with respect to x yields:

$$2x + 2yy' = 0$$

We can approximate the derivative term  $y'$  by using small changes in x and y, denoted by  $\Delta x$  and  $\Delta y$ . In this equation can be approximated by:

$$\frac{\Delta y}{\Delta x} = -\frac{x}{y}$$

Rearranging:

$$\Delta y = -\frac{x}{y} \Delta x$$

So if we move along the circle by  $\Delta x$  in the x-direction, then we need to move by  $\Delta y$ , specified by this last equation, in the y-direction. If we instead ourselves to (x0, y0), then this tells us exactly where to put the next point on the screen display. This will not work if you have the current next point vertically adjacent. If we increase with (x0, y0) we will only see one point and then advance to the next column. We should now switch to using  $\Delta y$  and differentiating the corresponding  $\Delta x$ . Fortunately, by using symmetry we stop as we reach such a point.

conference into a small article. Let me reiterate a few important ideas:

- Put yourself in the user's shoes. If this involves extensive testing by yourself as a friend (even to be so) then so be it!
- The user learns quickly when a program behaves in a consistent way across a variety of circumstances.
- Don't be afraid to remove portions of code because they don't work well with the user. Your program will be better for its simplification.
- Try to talk in a language the user understands whether by symbols or text.

It is instructive to look at where people's programs and think about what annoyed you about them. Learn from this don't make the same mistakes yourself! It can also be useful to remember what you liked best about a program.

The subject of HCI is receiving a lot of attention these days and many books have been written about it. There is a vast range of theories and practical approaches concerning the design of the interface with the user and I have found a little reading on the side has helped a lot. The Open University book "Human-Computer Interaction" (Jenny Preston et al., ISBN 0-041-42598-0) provides an excellent comprehensive introduction to modern HCI problems and solutions; if not strictly applicable in the class, it will certainly get you thinking.

I hope I've provided some food for thought. If anyone disagrees with anything presented in this article then drop a line to Mallory. I'm sure they'll be pleased to print your comments. Good luck on your next program!

Page 6's News About User

# The CLASSIC PD ZONE



by  
Austin Hillman

We return to normal service this time with yet another random selection taken from the public domain.

## READ ALL ABOUT IT

**Codecracker Newsletter Reader (320x40)** by Sean Padden is a program that will allow you to produce a classy looking disk based newsletter. The CMN reads standard text files into which commands are inserted to control the features of this program. The CMN automatically word-wraps and interspaces justifies the text for you.

The commands available are as follows. **Load file** - loads a text file one of the two text buffers available. Proportionally information is derived from the text data itself. **Select font** - selects either one of the two fonts for printing by the program.

**Wait for a key** - This pauses printing until you press a key. Whenever the computer is waiting for a key, the border around the screen becomes a different colour than the background.

**Page Break** - Halts the printing, and waits for a key. CMN will wait for a key if the screen is about to scroll, so this is useful only as a chapter break or something like that.

**Clear Screen** - Instantly clears the screen and starts printing from the top.

**Set screen colours** - The first parameter sets

one of sixteen possible hues for the screen colour. The second parameter is the intensity of the screen. The third parameter is the brightness of the text itself.

**Load Screen File** - This clears the text screen, sets a graphics mode, and loads 7680 bytes of image data directly on the screen. The four colour registers are stored as the last four bytes of the file in Micropointer format. After loading the image, the CMN waits for a key, then returns to a clear text screen and continues printing.

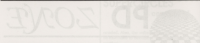
**Global Borders and Line Spacing** - Sets three important global settings. Left margin, right margin and line spacing.

**More Option Definition** - Sets the option string referred to by the number parameter to the **Screen** parameter. This, when combined with screen selection makes this a powerful program.

**More selection** - This command waits for a number key to be pressed. The number must be greater than or equal to one, and less than or equal to eight. The number pressed is stored internally. It where used in place of a **Screen** number sets the **Screen** we stored with the screen option definition command, instead of an X.

**Execute sub-file** - Reads and prints and executes a sub-file like file.

**Top of file** - This re-positions the current file. **Close file** - Similar to execute sub-file, except that the current file is read, and the



new file replaces it.  
If statement - Skips the next line if the number key pressed was NOT the parameter.  
Exit file - This is not required at the end of a file, it just serves for a useful way to exit a subroutine or loop when you test with an if command.

Define a label - This marks a position in the file that you will be able to jump to with the next command.

Jump to label - This causes the CPU to skip all instructions and test until a label is found that matches the jump command. Note this will only jump forward.

Make sure file exists - This command will check for the existence of a file for XL. If the file does not exist, the CPU waits for a key, then re-checks for the file. This command will not allow the CPU to continue until the file it wants is found. Use this command to verify that the user has satisfied files if you asked him to.

The example subroutines provided is a tutorial on the commands listed above and how best to use them. Several digitized picture files are also included.

Every thought file appears to be an excellent piece of software I have not yet come across any disk magazine that uses the program, which seems a pity.

## GOOD GAME

**Ultra Tetriz (P180)** is a Turbo-BASIC version of the popular falling bricks game written by Tim Truettide. In this version the pieces are rectangular and composed of three colored squares. The object is to get three or more squares of the same color into horizontal, vertical or diagonal lines.

The first five levels are selectable, but you

have to beat the next five by still above. Controlled by keyboard for left, right, rotate, drop and pause. A high score table is provided, as is a good looking title screen. Released on a shareware basis, the registered version has instructions on how to unlock the hidden features of this game. If you like Tetris I think you will find this a good variation of the original.

## HELPING HAND

**Extended Atari BASIC (P188)** by Robert Curry adds extra commands and features to standard Atari Basic. It is suitable for the XL/XE only as it utilizes the shadow ram to these machines and thus only uses 2k of free ram.

On loading the standard screen appears with an extra 25th line at the top telling you EAB is installed. Also on this line a clock counts the elapsed time until it is set to the current time by the appropriate command. The extra line will remain active until a graphics call is made.

The program is disabled when DOS is called and so adds 16 DOS commands to reduce the need to do so. They are: DEFKEY, LOCK, UNLOCK, DELETE, RENAME, WRITE, COPY, FORMAT, SINGLE density format, BINARY and BINARY. Another 11 commands help with basic programming including a PROTECT command which will 'lock up' the computer to keep it safe from interference. As well as AUTOBANK, KILNUMBER, VARIABLE NAME TABLE, VERIFY, DEC, HEX, DEC, LOMEM, ERASE and CONVERT commands.

Special function commands control the cassette, printer and BASIC commands as well as providing a calculator and basic off from the keyboard. Also available is a joystick control-

led screen, flashing if you prefer, 5 predefined and 7 user defined keys for your convenience.

Most of the extra commands may be utilized by a basic program via an IO call. Sample programs are provided to demonstrate the CONVERT, FLASH, ERASE and BASIC commands. Full documentation of all commands and features is provided.

Extended Atari BASIC is a neat implementation of many useful commands and utilities for the basic programmer. That being said, Turbo BASIC has now superseded this program and is clearly the first choice for serious programmers.

## A NEW LOOK FOR OLD FONTS

**Glyph Font Editor (P212)** written in Action! by Jack Piment is a fully featured font editor. The layout is clean and simple with a first display, edit window and menu table. The menu has 21 commands which are selected by arrow key as per usual, the edit window is also controlled by either method. Two new fonts plus the system font can be held in memory at once and can be swapped at will. The system font is for reference only.

Creating a new font or altering an existing one is simplicity itself, but if you are feeling lazy, nine new fonts are included to show you what can be achieved with this program.

Some handy utilities have also been provided along with font instructions. FONTLOAD.COM allows SpartanDOS users to load a new resident font from the command line. FONTTEXT.COM converts any font into BASIC data tables or an Action! data block for use in your programs with the FONTLIST or FONTACT loader programs supplied.

## WRITE ON

**Chick Scratch (P147)** by Robert Chick is a word processor for the XL/XE. On loading you are presented with a red screen and a flashing cursor with a command line at the bottom. Editing commands are the usual CONTROL letters or OPTION plus CONTROL letter combinations. Print format commands are SELECT letter combinations. They are set up to suit the XMM801 printer but can be changed to suit any other printer. Commands are summarized on the help screen available by pressing CONTROL R. The usual autoDOS screen completes the package.

Needless to say if the default settings are not to your liking they may be altered. The maintaining program provided allows you to permanently change the default settings for text, screen colors, upper/lower case, insert/delete mode, screen width, print format, key click and text/program mode.

The full documentation supplied provides all you need to know. It clearly resembles other word processors like Spenscript and in their case to use if you are already familiar with the layout, but even for the beginner it is a good choice. It may lack some of the features that more experienced word processors have, but it is a very competent program as I have discovered while using it to produce this article.

## RATINGS

CODEMINDS NEWSLETTER READER (DS448)	60%
ULTRA TETRIS (P180)	70%
EXTENDED ATARI BASIC (P188)	90%
GLYPH FONT EDITOR (P212)	80%
CHICK SCRATCH (P147)	90%



# JOURNEY INTO CYBERSPACE

**John S Davison**  
continues his  
exploration of  
the Internet

## TO AMERICA VIA THE INTERNET

**I**n the last issue we looked at how my son John Jay, used the Internet to help arrange his migration to the USA. Seven months after his departure we decided to visit him at his new home near Chicago. Also, we have friends in Fort Worth, Texas we'd not seen for several years, so we decided to include them on our itinerary. Following John's success with the Internet we thought we'd use it to plan our trip too.

The major expense of any trip to the USA is the air fare, but there are lots of on-line places you can look to find special offers on flights (and complete holiday packages if you need them) to help keep the cost down. For instance, if you're a CompuServe member the command GO HOLIDAYS will take you to an area that claims to have 70,000 holiday and flight deals on offer. We have an old friend who works in the travel industry who can get us really good deals on flights to the USA, but unfortunately he had no tickets in Chicago available in the timeframe we wanted. The best flights he could offer were from Cascock to Houston, Texas, so we decided we'd start our trip in Texas. A quick scan of prices of similar flights on the Internet and CompuServe showed our friend's offer beat the on-line deals, so we booked through him. One small problem - Houston is about 250

miles from where we really wanted to be - the Dallas/Fort Worth (DFW) area - so we needed an "inland" flight to take us there. A quick visit to Yahoo (www.yahoo.com) pointed us at SouthWest Airlines (www.southwest.com) who were advertising special promotional deals on flights within Texas. The first to DFW was very reasonable and I could have booked it on-line there and then. However, I can't yet bring myself to trust my credit card details to the Internet, so decided to book through a travel agent instead. Unfortunately, we then discovered that SouthWest Airlines don't subscribe to the booking systems used by UK travel agents, so we couldn't book directly. The agent, checked when she was available, and found that American Airlines were also doing special promotional deals on Texas routes and could actually substantially undercut SouthWest's low ticket prices, so we booked with them instead. The total cost of the two flights to get us to DFW was less than any direct flight I could find, so we were doing OK so far.

## PLANE OR TRAIN?

It's around 1100 miles from Fort Worth to Chicago, and the sensible way to travel between them is obviously by air. So did we do the sensible thing and book these flights too? Oh, no! We had this crazy idea of going by train instead. The thought of travelling across Texas, Arkansas, Missouri, and Illinois using a mode of transport unknown to most Americans was appealing, so it added an extra element of adventure to the trip. So, it was back to Yahoo again to find details of train companies. We ended up at Amtrak's web-site (www.amtrak.com), the company that now handles virtually all long distance rail travel in the USA.

The site described all Amtrak's long distance routes, and in our delight we discovered they offer special USA visitors' rail passes. These were just what we wanted - unlimited travel by train for 15 or 30 days in various areas of the USA. The one which would get us from

Fort Worth to Chicago and back again cost the equivalent of about £150, a real bargain. This covered "coach class" seats only, with basic or de-lux sleeper cabins accommodation available at (non-subsidised) extra cost. Travel would be on the "Texas Eagle" a train that runs from San Antonio in south-west Texas via Fort Worth all the way up to Chicago. The web-site also

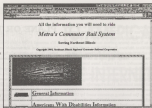




showed the train's timetable, so we could track out our other travel plans around it. Those long Chicago trains rarely run every two or three days, so you have plans accordingly. If you miss one it could wreck the rest of your schedule.

Further details were available by filling in your name, address, and phone number in an on-line form, so we did that. A few days later we were surprised to receive a phone call from John and from Laurence Hall, Amtrak's US agent. Amtrak had informed them that we were interested in USA rail passes, so were calling to see how they could help. In fact they were extremely helpful over the following few weeks, advising us on the best rail pass for our purposes, answering all our questions about USA rail travel, and sorting out the ticketing and payment details in an efficient and friendly manner. This was excellent customer service - and it was all triggered via the Internet.

Throughout the planning period there were e-mail messages incoming back and forth between John (i.e., our Texas friends), and ourselves, confirming all the arrangements. One day a message arrived from John that caused a little consternation. Neither he nor his wife Alison would be able to meet us at Chicago's Union Station as originally planned. They suggested we travelled the 88 miles out to Wheaton in a Chicago district commuter train and take a taxi from the station to their apartment and they'd meet us there. So,



it was back to Yahoo again where we found a web site containing route maps and the complete current timetable for Metra Rail ([www.metra.net](http://www.metra.net)). Chicago's local train system Details of the Chicago-Wheaton service were duly added to our growing collection of travel documentation.

## SOMEWHERE TO STAY

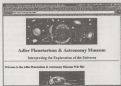
Accommodation was the next area to tackle. In some our now somewhat blurry looking memory, We'll need a hotel somewhere in the DFW area for a couple of nights at the start of our visit, another for six nights on our return to Fort Worth, and one in Houston for our final night. In Chicago we'd be staying with John and Alison, so no hotel needed there. Many years ago I had a business trip to Fort Worth and stayed at great hotel, the Worthman. For a ridiculously cheap price (about \$50 for a large, executive suite), the we looked it up on Yahoo and were amazed. It has its own web-site. The best room deal I found there was now a rather luscious \$100 per night, so we

decided to check out Holiday Inn prices instead. There are Holiday Inns all around the DFW area, so via their web-site ([www.holidayinn.com](http://www.holidayinn.com)) we printed several for comparison purposes and eventually settled on one that suited our budget.

You can also check availability of Holiday Inn rooms on-line for the dates and type of room you want. To our chagrin we discovered that our first choice hotel was fully booked. Number two on our list had rooms available, so we went for that. Again we could have booked on-line, but the credit card number payments are a pain more and we called the first Holiday Inn reservation number instead. The person taking the booking tried to charge us a higher room rate than we were expecting, but advised when I quoted the rate we'd seen on the web site. We booked the hotel for Houston at the same time, and got the web-site rate for that too.

We decided to rent and see how much cash we had left at the end of our Chicago stay before looking accommodation for the return visit to Fort Worth. In fact, our Texas friends found a really good deal for us, and this was sorted out via e-mail before we left Chicago.

The only other essential to take care of was the car hire, but as we were staying near the airport we figured we could get a good deal locally where we arrived, and this proved to be the case. But you can book up rental rates online or back online with the major companies if you wish.



## TOURIST ATTRACTIONS

After sorting out all the essentials we started checking out tourist attractions, using the Yahoo and AltaVista ([www.altavista.digital.com](http://www.altavista.digital.com)) search engines. We found dozens of interesting possibilities here - in Fort Worth there's Billy Bob's ([www.billybobstexas.com](http://www.billybobstexas.com)), the biggest bar and night club in the world



(accommodating 8000 people and with live bull-rifling competitions on certain nights!) the Stockyards ([www.stockyardstexas.com](http://www.stockyardstexas.com)), which is surely one of Texas's great undiscovered tourist attractions with its terrific restaurants, bars, rodeo arena, shops, etc.; and the Tamarisk ([www.ci.grapewine.tx.us/tourism/tamarisk.html](http://www.ci.grapewine.tx.us/tourism/tamarisk.html)), a beautiful wild-west stream-trails trail operates excursions from the Stockyards several times a week. For Chicago we checked out what was on at the many theatres, and jazz and blues clubs; details of the excellent Museum of Science and Industry ([www.museumofscience.org](http://www.museumofscience.org)) the Museum of Contemporary Art ([www.moca-chicago.com](http://www.moca-chicago.com)) and the Adler Planetarium ([www.adler.org](http://www.adler.org)).

[go.education](http://go.education)).

Thanks to the Internet we were able to do virtually all the research for this trip from home. If we wished we could also have made on-line reservations and payment for air travel, hotels, and car hire. During the trip, everything turned out pretty well as our Internet research had shown - even the Chicago Motor Fuel converter took us caught by surprise at the time stated on the Internet timetable. Overall, our experience backed up John Jarr's findings - that the Internet really is a usable, practical tool for this sort of activity. So, if you need to plan a trip, give it a try - you'll be amazed at the useful facilities and material out there.

## NAU Internet Contact List

The following NAU readers would welcome a mail contact from other Atari users. If you'd like to be added to this list please drop an e-mail note to John S. Davidson at the address below.

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