BYTE BACK "ByteBack"

ISSUE 8 • 1994

start here...

Editorial plus a few little bits of useful information

As promised in Issue 7 I have tried very hard to produce this issue in record time – to make up for the delay of Iss7. As mentioned, I am aiming to keep the flow of ByteBack more regular and frequent..

A lot of the articles for this issue were originally intended for Iss7 (the larger issue), so I have carried a lot of them forward for inclusion here.

One item that did not get 'in' to the last issue was the glorious picture of Chris Richardson and his chums, posing ever-so-naturally at the 8-Bit Software stand during the recent Acorn Show. It would not be possible for me to imagine leaving this little gem out of BB, so here it is...

Sorry for ignoring you guys!!

That's Chris on the left.

Turning to the Letters page, Peter Hopkins offers some interesting information regarding a sideways ram board: itcan be a ram-disc or a printer buffer, provided you have the correct software for it.

I have received a letter from Peter Davy, who enjoys writing Adult Leaning Software and to date has filled 19 SS Discs with his efforts! (More details on the page 3).

Hopefully every members should have received a slip of paper with Iss7 indicating the extent of their subscriptions. The length of your subs should appear to be beyond that which you were expecting: as promised each issue of the 'new-look, pop-it-in-my-pocket' ByteBack will only "cost" half that of the original sized BB, so you get 2 for the price of 1! If you notice any glaring errors with your subs extension, please let me know. Otherwise, I hope that you will be happy with the arrangements as they are now...!

Members of 8BS may have noticed a letter from an 8BS member "reviewing" BBC Support groups other than 8BS itself. Unfortunately ByteBack came out of the article somewhat scarred! I guess when you're heading up a project like a user group, you're going to be in for criticism. The gentleman has a right to his opinion *continued on back page*

econet-friendly

Local Area Networking for BBC's and Archimedes

Acorn introduced the Econet system way back in 1983 (or about then) to link BBC computers, Atoms and Electrons (although the interface was never made for the Electron) together, saving money on expensive items like printers and disc drives. It could cost over £200 for a 40 Track 100K drive in those days.

The Cable is 5 core, two wires for the data, two wires for the clock and the earth. An Econet requires a Clock to work. The clock makes sure that the data that is transmitted over the network reaches its destination without getting corrupted by other data. The clock should be left on all the time, or the computers will give the 'No Clock' message.

Each Econet should also have a terminator at each end. The terminators are to stop 'reflections' where the data can appear twice as it 'bounces back' off the end of the wire.

Each computer, or station as they are called, on an Econet is connected to the network itself by a 5-pin DIN wire, like a hi-fi lead. This lead usually plugs into the back of the computer and onto a black box on the wall.

The station must also have an Econet interface installed. This enables it to communicate with other stations. This interface also includes the NFS Rom, the Network Filing System. On BBC B's this upgrade was a load of chips that had to be inserted into the board, but for the Master it was just a simple Plug-In module and a ROM. The Filerserver is the station that controls the disc storage.

Acorn have released 4 'levels' of their server so far. They started with Level 1. This was a BBC connected to a disc drive. Each station was allocated a directory on the disc, which was just a DFS disc. You could save your files in your directory on this disc. With Level 2 came a directory structure, like ADFS. This needed a second processor (tube) to work and used its own format of discs. Both Level 1 and Level 2 required a double disc drive. Level 3 or Filestore is box without a keyboard or monitor that has a hard disc, this was mass storage for networks. Finally level 4 is for the Archimedes, allowing it to use its hard disc as a server.

SJ Research also make file servers, the HDFS was a 20mb Hard disc server, which also used a tapestreamer for backup and had a printer server built into it - it has since been superceded by the MDFS. The MDFS is a modular system, allowing SCSI hard discs and tapestreamers, as well as floppy drive to be connected. It also has a printer server built in.

A printer server allows shared use of a printer. This printer can be accessed from any station. The Acorn printer server ROM allows a BBC to become a printer server, but it is not really possible to use the machine for anything else at the same time.

The SJ servers also 'spool' printouts to disc, so users can queue for the printer, this means that if the printer is busy you can send your data and it will be placed in the queue. If the printer server does not support spooling, you have to wait for the printer to be free before you can send data. Acorn's

level 4 printer server also supports queueing.

Econets could be linked together by bridges. This allows large sites to have several small networks joined together. This could be necessary if one net became too large, and therefore too slow because it has a lot of stations on it.

It is also possible to send text messages over a network, and also to take over other stations, which can be a bit of a pain if you are trying to work! Luckily, these features can be disabled.

ECONET HAS SEVERAL ADVANTAGES :

- You can save your work on a central disc and call it up anywhere.
- You can have access to a large number of programs easily.
- You can print to a shared printer.
- No need for floppy discs that are prone to corruption.
- Programs are consistent on all machines.

AND DISADVANTAGES :

- If a fault develops, rooms of computers can be rendered useless.
- Hackers can access any files if they find the password.
- A disc crash can cause a lot of data loss. (it has happened to me)

All in all, if you have several machines, the advantages outweigh the disadvantages considerably.

Chris Johns

Adult Education

Software from Peter Davey

"My interest is in writing programs for Adult Basic Education for the BBC B and Master 128 computers. My present output consists of more than 150 programs (mostly literacy but some numeracy) which occupy 19 40-track disc sides. I supply the software free. Users pay only for the postage and packing. My software is also now available on 5 double-sided 80-track discs from 8-Bit Software."

Anyone interested in further information can obtain details from 8-Bit Software or from Peter himself, by sending for details, including an SAE, to Peter Davey, Adult Basic Education Discs, 68 Headlands Road, Ossett, West Yorkshire WF5 8HX.

~~Paul Harvey,~~
Backbyte,
~~33 King Henry Mews,~~
Enfield Lock,
Middlesex, EN5 6JS.

I don't wish to pass comment on this the address on a letter I recently received, however it has been noted and logged for future reference. Suppliers name respectfully kept secret...

Further to a comment in Iss6: "Printers part 3", a member was advised that the BBC could not support dot matrix printers with more than 9-pins. This is not actually true: the control of the pins in the printer head is supervised by the printers built-in circuitry. The host computer has little knowledge of the printer it's connected to, as long as it's accepting the data sent to it.

Letter

Write Back to ByteBack! (OK, crap joke, I know...)

The setup I use is a BBC B with the Solidisk 256k ram/rom board, the Solidisk 1770 DDFS with 5.25" 80 track double sided disc drive, Solidisk Real-Time-Clock (with the Tic-Toc Rom From C.A.T.S), the Morley Teletext adaptor and a Canon PW 1080-A printer.

Although I only have one physical drive, with the 256k ram/rom board and the Solidisk 2.21 DFS I can configure part of the 256k board as a ram-disk. I can copy a complete 80 track DFS disc to the ram-disc. This makes copying discs with one physical drive a lot easier but is is useful for any programs that access the disc quite frequently as it saves wear and tear on a physical drive and also increases access time. Although I can format discs to DDFS, I only use DFS as the Ramdisc creates only to DFS and copying between DFS and DDFS can corrupt some data-files.

The main purpose of the RTC is to give the time/date (in same format as TIME$ does on a Master). Being an add-on , you do need a Function to get the time/date by the simple method of:

```
DEFFNclock
A%=14:X%=0:Y%=9
CALL&FFF1
=$&900
```

The Tic-Toc rom of the R.T.C also allows control of the 256k board, mainly plugging and unplugging any rom images you have loaded. As it has some battery backed cmos ram, it allows you to configure how you want the computer to start up, eg in what screen mode, interlace on or off etc. These can all be selected from the Front Panel simply by using keys to toggle various options on/off. Once you have set your configuration you can then write it to the cmos ram. You can also save/load the configure data to/from disc.

When you send data to the printer, the printer being a slow device takes time print the data. If the printer has more data than its own buffer can handle it makes the computer wait until it has finished printing before allowing the computer to send anymore. This ties the fast computer to the slow speed of the printer. With the 256k board you can create a 16k printer-buffer. Now the computer can send all its data (up to 16k) to the buffer and then get back to doing other things at its normal speed whilst the printer draws the data from the buffer at its own rate.

The Canon printer allows (If you have the additional ram chip within the printer fitted and selected) to download various fonts from disc to the printer. This allows printing in NLQ in either the standard printer font (held in its Rom) or whatever font you have in the ram chip. Using the embedded commands in Interword, allows you to download different fonts at anytime and to switch between these fonts and the normal rom font.

Peter Hopkins, Peterborough, Cambs

sorting

building on our sort routine... part 2

Last month we put together a shell of a descending sort routine. Here we add an ascending sort supplement and a rudimentary "front end" to make the routine more user friendly.

Once the structure for a program has been put together and has been well tested to make sure the routines run as they should, it's time to make it useable by others. At this stage it's useful to enlist the help of somebody who has no knowledge of your program to test your "interface". If you run all the tests yourself, you will not test the program impartially!

The important point about an "interface" is that it has to be 'user-friendly'. It's the connecting point between the user and the raw routines that produce the desired results: keep it plain, simple and friendly. If users are going to be new to computers, perhaps some HELP screens of information should be available at certain points in the program.

Many programs are Menu driven; this keeps the information prominent and the 'keying-in' minimal. The user makes their choices by selecting an option from a Menu. It's useful to make the selection key the first letter of the option if possible, ie L for Load, S for Save, Q for Quit...

So, without further delay, let's add an interface!! The lines from last month's routine are included within this program.

```
10 REM Bubble Sort
20 PROCsetup
30 REPEAT: MODE7: VDU 23,1,0;0;0;
40 PRINT''TAB(12)"Bubble Sort"'TAB
(12)"==========="
50 PRINT'TAB(6)"(D)escending sort"
60 PRINT'TAB(6)"(A)scending sort"
70 PRINT'TAB(6)"(V)iew item list"
80 PRINT'TAB(6)"(Q)uit program"
```

At this point we have displayed a basic Menu for the user to pick their choices from. Now Beeb awaits a keypress (line 90) and the result is held in G$.

```
90 REPEAT G$=GET$:choice=INSTR("DdAa
VvQq",G$): UNTIL choice<>0
```

The variable 'choice' will hold a number equal to the position in the string ""DdAaVvQq" the letter pressed appears. If the user presses 'a', 'choice' will be 4.

```
100 ON choice PROCdescend,PROCdescen
d,PROCascend,PROCascend,PROCview,PRO
Cview,PROCquit,PROCquit
```

Using the value of 'choice' the "ON choice..." command will direct the program to the PROCedure listed at the 'choice' position in the list here, in the case of selection 'a', a call is made to PROCascend. Each PROCedure appears twice because we are allowing for an input of Upper of Lower case letters from the keyboard: 'A' and 'a' will both call PROCascend so it has to appear twice, for 'choice'=3 and 'choice'=4.

```
110 UNTIL forever
```

At this point the program will loop back to line 30. This is an inescapable loop because the value of 'forever' is set to FALSE in line 180: 'UNTIL FALSE" never happens.

```
120 DEFPROCsetup
```

Sorting...

```
130DIM name$(10):RESTORE
140FOR loop=1 TO 10
150READ name$(loop)
160NEXT loop
170DATA London,Hull,Manchester,Birm
ingham,Oxford,Ashford,Cheshire,Yorks
hire,Leeds,Glasgow
```

These lines are as in the original program.

```
180 forever=FALSE
190 ENDPROC
```

The next PROCedure is basically the original sort section from the original program. Here it has been separated into its own PROCedure so it can be called if the user wants ASCENDING alphabetical sorting.

```
200 DEFPROCascend
210 PRINT''"Sorting.";
220REPEAT: FLAG=FALSE
230FOR loop=1 TO 9
240IF name$(loop)>name$(loop+1)
temp$=name$(loop):name$(loop)=name$(
loop+1):name$(loop+1)=temp$:FLAG=TRUE
250NEXT loop
260 PRINT".";
270UNTIL FLAG=FALSE
280 ENDPROC
```

Like the previous PROCedure, this is the part that sorts the list, in this case, into DESCENDING alphabetical order. The only change between this and the ASCENDING PROCedure is in line 330: in the first, the comparison between name$(loop) and name$(loop+1), the check to see if the first is larger than the second (ie it needs to appear after the first in the list). In the previous PROCedure, the reverse is tested.

```
290 DEFPROCdescend
300 PRINT''"Sorting.";
310 REPEAT: FLAG=FALSE
320 FOR loop=1 TO 9
330 IF name$(loop)<name$(loop+1)
temp$=name$(loop):name$(loop)=name$(
loop+1):name$(loop+1)=temp$:FLAG=TRUE
340 NEXT loop
350 PRINT".";
360 UNTIL FLAG=FALSE
370 ENDPROC
```

Lines 210 and 300 Print "Sorting." on the screen and each time through the list as is gets sorted, lines 260 and 350 print an additional dot. This gives a visual representation of the list being sorted. It also tells the user that something is going on. With only 10 items to sort it's too quick to really be necessary, but with a long list, it's important to keep the user in touch with the program, don't let them think that the thing has crashed or bombed out.

```
380 DEFPROCview
390 CLS:PRINT''
400 FOR loop=1 TO 10
410 PRINTTAB(4)"name$(";loop;") =
"name$(loop)
420 NEXT
430 PRINTTAB(2,23)"Press SPACE to
continue"
440 REPEAT UNTIL GET$=" "
450 ENDPROC
```

DEFPROCview is a simple PROCedure that displays the list of items at any point.

```
460 DEFPROCquit
470 PRINT'''TAB(6)"So Long...."''
480 END
```

Finally, the Quit routine exits the program. It would be more proficient to direct the program elsewhere, perhaps to a disc menu that offers other choices of program to load. Alternatively, it could be made to clear out of the memory altogether, tidying up ready for whatever the user wanted to do with the BBC next.

bits and bobs

a mixture of little snippets

MURPHY'S LAW OF COMPUTERS

LAW #1

The moment you utter "Well, this system seems to be running just fine", something breaks down.

LAW #2

When you are in a hurry and you need everything to go just right (as it does normally), everything goes just wrong.

Anybody know any other befitting laws of computerability?

"I was directed to you by Beebug in the hope that you would help me with my problems.

I have a BBC computer with TOOLKIT ROM & Watford DFS. I have DS 40TK Cumana drive which has given problems from the start. Cumana hasn't been very helpful. I'd like a dual drive (31/2" + 51/4" DS, 40/80TK) at not too high a cost.

I would be very grateful for information about your group. An IRC is enclosed to defray some postage costs. Thank you."

K G Vergis, Malaysia! (what's an IRC?)

OO-ER MISSUS!

Issue 6, Hints & tips

`DEFPROCitalic` can cause a few glitches unless you change `!&79=&6A0070B9` to `!&79=&4A0070B9`

☹ ☹ ☹ ☹ ☹ ☹

MEMBERSHIP

Present subscription is over 70...

Welcome to all of you new members!

IN ISSUE 9

I'm pleased to say that ByteBack will be making it to issue 9!!

- A beginners guide to VIEW
- A supplement sheet to members that begins a series on the various BBC models
- Something else I haven't yet thought of but hopefully will by the next issue.

CLASSIFIEDS

I have been asked whether the small ads section has been dropped from the new-look BB. The answer is "no": there doesn't seem to be much for sale at the moment. When there is, you'll know...

FREE MEMORY

On some versions of BASIC there is a command for discovering how much free RAM remains. This is useful whilst writing a program because you can find out how much space is still available. In BBC BASIC, it is possible to find out how much free i... there is by this short routine:

```
DIM P%-1:PRINT HIMEM-P%
```

The figure displayed after entering this line already compensates for space taken up by all variables used in your program.

BY THE WAY...

Did you know that in DATA statements, it is possible to put variable names in place of actual numerical values. The data read will be the values given to the variables!

continued from front cover

and thankfully Chris at 8BS allowed me to put my side of the story across in the proceeding issue of his disc-based magazine! (Thank you Frank for your support!!) At this point, I understand that a reply has been posted on the next issur of 8BS, which I haven't yet had a look at. This could become a "series" if I'm not careful.

John Davis phoned me a couple of weeks back and asked a couple of questions including, ***"Where in the BBC B is the sound chip?"***. It's marked as chip 76489 and can be found at the bottom left of the motherboard (IC18).

In BB Iss6, I was asked if it is possible to get colour output from the Master 128's VIDEO OUT socket. Bernard Beeston offers this advice (make sure you're pretty adept with a soldering iron!): *Connect a 470µf capacitor between the emitter of transistor Q12 and the base of transistor Q13*

Strange turn of events since Iss7: Autumn Designs (the company I run with my wife) has just moved out of home and into a separate office. Now I don't have access to my Mac computer in the evenings to work on BB! I must devise another way around this problem...

HELP!

If you are able to offer advice or help to these BBC users, please forward the details to me at ByteBack. If you can offer advice I will print it here. Alternatively if you wish to contact these fellow users directly, I will forward their details to you...

My BBC B is faulty: at switch on are:("BBC Computer 32k, Basic"), then a flashing '-'. The sound is ON and stays on;the keyboard is utterly dead; Caps lock and Shift lock are on. Also 2 days before, for five minutes or so the keyboard was malfunctioning: one 'block' was dead, another chunk of the keyboard was sending the wrong symbols, then the behaviour of the 'blocks' swapped around... then recovered. Can it be fixed or does someone have a BBC they would sell?...

Mr Truelove, Chingford

We have several requirements: 1) We are interested in recruiting a consultant to help with problems regarding our BBC machines: add and modify programmes, advise on hardware expansion and replacement; 2) Obtaining more hardware, mainly Hard-discs, transfer files (programmes and data) from presently faulty Hard discs (errors: "Directory Broken); 3) Advice on expansion to CD, Fax, interconnection with IBM PC, etc. Generally we would like to keep in contact with other members of ByteBack.

Dr A Ur, London

Subscription details

ByteBack is produced by me in my spare time. It is not a commercial venture but I have a lot of fun putting it together each issue. If you like reading ByteBack, you can receive it regularly by subscribing.

Each issue is available for 70p, which includes postage. You can subscribe for any number of issues up to a maximum of 12. Just send a note with your name and address, details of how many and which issues you would like and a cheque or postal order for the correct amount (it's inadvisable to send cash through the post!) If you send a cheque, please make it out to Paul Harvey, not ByteBack!

ByteBack, 33 King Henrys Mews, Enfield Lock, Middlesex EN3 6JS