FORMAT

A Magazine from INDUG
For DISCiPLE & PLUS D Users

ISSUE #10 - MAY 1988
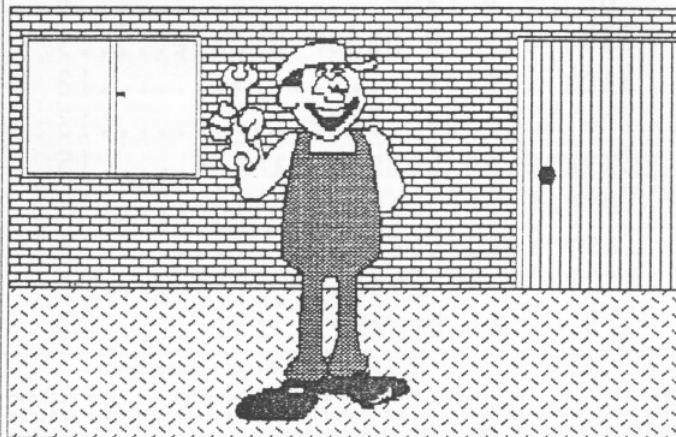
GDOS v3 UNDER REPAIR

INDUG.

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ISSUE #10 - MAY 1988

The Editor Speaks

One year ago this month I was completing plans for the launch of INDUG and FORMAT. At that time I hoped for a membership of around 200 by the end of its first year, 300 if I was lucky. Now here I am, editing issue 10, and membership already stands at 800+ and its still growing fast. Last month I even had to go out and get 30 extra copies of FORMAT printed just to cope with new members.

After many hours (weeks more like it) pouring over the source code for the DISCiPLE operating system I am pleased to bring you GDOS 3c. This is a major upgrade to GDOS and as well as curing several 'bugs' in 3a/3b it also introduces some new feature. For the moment this upgrade is only available through the User Group, so it puts you one step ahead of the crowd. I hope to be able to do the same for G+DOS very soon.

I have been inundated with complaints (well I've had several letters) about the Spring Software Competition. When I announced it in the February issue (#7) I set a closing date of 30th April. However several people complained. You see some foreign members do not receive their issue of Format until 8 or 9 weeks after dispatch and several UK members felt that two months was not long enough to complete a program from scratch. OK, OK, so I didnt think long enough before I drew up the dead-line. So to be fair, and to get people off my back, I have extended the closing date to the 31st August but that must be the final change.

I try to be available on the INDUG HOTLINE as much as possible but I have been asked for guidelines as to the best times to get hold of me. I will reverse this by giving the times when its best NOT to call. Between 12am and 1pm and between 6 and 7pm on week days is feeding time so please avoid. Saturdays I'm out (until about 1-30pm). At most other times if I'm not around then the answerphone is on, please leave details of your problem and ring back later for an answer.

This months issue also contains a revamped USE page. The User Software Exchange was given its name when I thought there would be lots of public domain software around for the Spectrum. I think the new name FORMAT SOFTWARE SERVICE is a much more suitable name. There's some nice software already on the list and even more coming along. Next month will, I hope, see the launch of a Tasword 128/+2 conversion program with Tasword 3 to follow later in the Summer.

See you next month.

Bob Brenchley. Editor.

NEWS ON 4

PLUS D PRICE INCREASE

Due to the large jump in chip prices over recent months MGT have been forced to raise the price of the PLUS D. The new retail price is £59.95 with the package price for PLUS D & 3.5" Drive going up to £139.95 plus postage and packing.

The special offer prices to INDUG members goes up to £54.95 and £134.95 which both include postage and packing.

27th ZX MICROFAIR

Yes its ZX Microfair time again. The date for your diary is Saturday 11th June and its again at the New Horticultural Hall in London. MGT will be there as usual and I will be on the stand to promote INDUG and talk to users. Doors open at 10am so don't miss it. MGT plan a large display of printers to go with the PLUS D or DISCiPLE and have promised some extra special offers. The new two-way adaptor I told you about last month will be launched at the Microfair. Called the TWO-FACE (where do they get these names from) it will allow the PLUS D to be used with other interfaces and will include switches to turn off units to avoid conflicts.

HACKERS HANDBOOK

The Hackers Handbook III is now available in the book shops. This 3rd version has had several sections rewritten by the author, Hugo Cornwall, and now includes a history of hacking. At this rate he will soon catch up with JAWS and ROCKY.

SWANSEA AT LAST

MGT are on their way to Swansea before the end of May. Their new address will be MGT, Lake Side Technology Park, Phoenix Way, Swansea Enterprise Park, Swansea. At first Alan Miles will be staying in Cambridge to tidy up the loose ends and man the phones until Swansea is on line.

SPECTRUM +4 RUMOURS

A rumour has been floating around this month that Amstrad plan to launch a Spectrum+4 this summer. Variously quoted as having 256k or 512k of memory, Z80 or 16 bit processor, anything up to Amiga graphics but, of course, a standard Amstrad 3 inch 175k disc drive. What is certain is that the +3 has been a failure and Amstrad is urgently looking for a new product to rescue their image with Spectrum Fans. Asked if it would affect their plans for the SAM computer Alan Miles said "No, in fact it makes us even more determined to produce SAM, we always expected some competition and it will help to keep us on our toes. I'm confident Bruce will come up trumps again."

YOUR LETTERS

Dear Editor,

As a novice PLUS D owner I was much impressed with Walter Kelly's Alter program. I have modified my G+DOS accordingly and it is a far better way of operating than the original. One wonders why the designers didn't do this in the first place?

Regarding No Snap Games. I have to report that I have not been successful with:- Leaderboard, Scrabble de Luxe by Leisure Genius and The Music Box, all in 128k.

I have been more successful with 48k games viz:- Psion Scrabble, Manic Miner, JSW 1 and Trivial Pursuit all of which Snap perfectly. JSW 2 will not Snap and Cluedo will not run at all. Has anybody any idea how to transfer the Trivial Pursuit question tapes (Uniload) onto disc?

For anybody interested in astronomy I have transferred Mirrorsoft's Star Seeker to disc and this gives instant planetarium and Solar system information.

Yours sincerely, Allen Vernon.

Dear Editor,

Having read the review in FORMAT of the Kempston Mouse I was impressed. I do a great deal of posters, worksheets etc. using Artist II. (I'm a teacher and use them for school).

The mouse arrived from Kempston, very fast service. The demo programs are great, writing the mouse into one's own programs is simple. BUT.... it will not work with Artist II or The Writer. I suspect that this is because of the different port mapping needed for the DISCIPLE. Sadly, the joystick option on Artist II will not operate with the DISCIPLE either.

This is the only problem I have found with the DISCIPLE but it affects what I most need it for. Two letters to Kempston on this matter have not been answered. Can you, or any FORMAT reader help?

On a more general topic - FORMAT is a very useful magazine and it would be helpful if a binder could be made available to hold a years issues. Also an annual index would be helpful. (Yes, I appreciate the work involved but its just a thought).

Yours Sincerely, Robert Lippiatt.

Thanks for the binder idea, I will look into it in the near future. Meanwhile can anyone come to Robert's aid on the ARTIST II? Ed.

Letters printed on this page may sometimes be edited for either length or clarity.

TAPE TO DISC

Revisited.   By: Steve Nutting.

Last months TAPE TO DISC program seems to have caused some people a little trouble. It did work for me when I sent it in, HONEST IT DID, but I have been able to find a few problem areas.

First, until a few weeks ago I didn't have a printer attached to my DISCiPLE. As there is no free space in the DISCiPLEs system file I use the area devoted to printer routines to store the extra code for TAPE TO DISC. Now I have a printer, I've discovered that part of this area is used by the printer initialize routine. So thats problem one solved, do a POKE @11,1 to turn of the printer before you save the system file.

Next I looked closely at my DATA COMPILER program, this was printed OK in issue#7 but, as listed, it doesn't check for total rubbish like REM 6,5x,34 and under some conditions this can cause the compiler to corrupt its own code. The listing given here will patch the "datacomp" file to add the new checks. Type it in and run it. A new message 'SYNTAX ERROR' is given when rubbish is detected.

```
  5 CLEAR 64511: LOAD d1"datacomp"CODE
 10 POKE 64683,195: POKE 64684,113: POKE 64685,255
 20 POKE 64955,195: POKE 64956,133: POKE 64957,255
 30 POKE 65037,195: POKE 65038,146: POKE 65039,255
 40 RESTORE 70: LET c=0: FOR a=65393 TO 65452: READ n: POKE a,n
: LET c=c+n: NEXT a
 50 IF c<>8555 THEN PRINT "error": STOP
 60 SAVE d1"datacomp"CODE 64512,941
 70 DATA 254,58,202,175,252,254,13,202,71,252,33,133,254,53,33,
158,255,195,229,252,254,58
 80 DATA 202,191,253,254,13,202,207,253,195,123,255,167,202,123
,255,43,43,17,123,254,195,18
 90 DATA 254,13,18,1,83,89,78,84,65,88,32,69,82,82,79,210
```

Now if your are a DISCiPLE owner, load the TAPE TO DISC data from last month and add the following lines.

```
182 REM s30844
184 REM 175,33,181,6,119,35,119,35,119,60,50,143,2,33,48,117,17
,33,22,1,66,3,237,176,211,187,251,201:2680
```

Load the compiler routine and RUN. If there are no errors type:-
POKE 30582,254: POKE 30583,31: POKE @11,1: RANDOMIZE USR 30829: SAVE d1"TAPE-DISC"CODE 0,6656

I can't find any problem with the PLUS D versions but if you still have problems after recompiling then try POKE 30582,254: POKE 30583,63 before the RANDOMIZE USR 30844 and SAVE.

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THE HELP PAGE

STEP RATE

I have a CS400 Cumana drive, which according to a data sheet I have from Cumana has a stepping rate of 3ms. The basic system program limits the stepping rate to 6ms. Is it safe to alter the program to allow a stepping rate of 3ms?

Ian Wooff. Durham.

No, I'm sorry to say you can't. Disc drive stepping rate and DISCiPLE / PLUS D stepping rate are in fact two different things. Drive stepping rate refers to the time it takes the head to step, forward or back, as its name suggests. However you also need a pause to allow the heads to settle before you access the disc, especialy when writing data. The stepping rate you enter into the system file is an amalgum of both.

From experience I find that 12ms is the best for most drives, with 9ms being the fastest I can recommend for a 3.5" drive. 3" drives need around 30ms. If you keep getting Sector Error messages then try slowing the stepping rate down, what ever you enter (up to the maximum of 255ms) discs are still very fast.

- - - - - - - - -

COPY PROBLEMS

I am having difficulty in using the "COPY" routine on my DISCiPLE (Version 3b) and would appreciate some urgent advice. On page 26, the manual advises that it is possible to copy all files from one drive to the other by using COPY D1"*" TO D2   I find that this is impossible as when trying to enter the instruction it will not execute the command, and a red square flashes over the "O" in COPY. As I urgently need to take back-up copies of many disks which have large numbers of programs. it would be extremely time consuming to transfer files individually.

Ray Gaunt. Sheffield.

It looks like you have an old version of the manual Ray. From version 3 the COPY command was dropped because, due to a bug in the 128k ROM, COPY is not treated properly by the Spectrum error handler and the computer will just hang.

To get round this the syntax was changed to SAVE d1"*" TO d2 in other words just change COPY to SAVE. Also in version 3b you can copy the entire disc with FORMAT d2 TO 1, this formats the disc in drive 2 and copies the disc in drive 1, track by track, to the new disc. This will cope with all files, including SNAPSHOT files, but may take some time.

- - - - - - - - -

More from the HELP PAGE next month..

GDOS 3c

By: Bob Brenchley and Nev Young.

Over the last few months several members have reported problems with OPENTYPE files on the DISCiPLE (GDOS 3a or 3b). I had found difficulties myself, especially when using twin discs. Following a long talk with Nev Young we set out to cure as many of the 'bugs' as possible.

The first problem occurs when you open a file on drive 2, the directory entry shows sectors being used on side one of the disc but the data is stored on side two. This is due to the operating system using 1 or 2 as the drive number in basic but 1 or 0 for internal storage. If the external form is used internally then 2 (10 in binary) selects side 2 of drive 2. Changing the instructions at location 4847 (in the open a read file routine) to call CKDRV (the routine that converts to internal form and does the same action as the instructions the call replace) cured this one. The same patch was also added at 4933 to cope with write files.

The next problem came when closing a file. The last disc in use was used instead of the drive number stored in the channels area. Here extra instructions where needed to effect the cure, but the DISCiPLE GDOS has only a few bytes spare and they are dotted all over the place. After a long search I found that a routine in the RAM part of the system was duplicated in ROM. It forms part of the networking system and exists in ROM for use when it is operating as a Pupil station. The RAM version is used when you are the Master station. However the routine in ROM can still be used even when the ROM is in its high-page mode (after the DOS has booted in). By careful placing of the entry point it was possible to insert a call (at location 5596) and free 62 valuable bytes for patches.

The instruction at 5177 called the Close File Sector Map routine in ROM. This was altered to call a patch at 5613 where the correct drive number and side where collected from the channels area before a call was made to the CFSM routine.

Next we come to something that isn't really a bug. When Bruce Gordon wrote GDOS 3 he didn't give machine code users a Command Code (Hook Code to ex microdrive users) to handle OPENTYPE files. After many sleepless nights I realised that the routines to open and close a file could be called from machine code provided I could do the job with just one Command Code. Why one? well there are two codes unused in the DISCiPLE (70 and 71) but only one in the PLUS D (71 is used to page in the shadow system) and I want to ensure compatability between the two interfaces.

OTFOC was the answer, Open Type File Open or Close. OTFOC uses

code 70 (46 hex) to do both jobs. Having called HXFER to transfer the user file definition into the DOS, you load the A register with zero and do a RST 8 instruction followed by DEFB 70. This will open a file, to close it load A with the stream number (4-15) and issue the restart, there is no need to use the HXFER command code before closing. I will be giving a full explanation of Command Codes, and the microdrive Hook Codes, that the DISCiPLE / PLUS D use in a new seriese of articles planned for July/August.

The Next bit is pure Nev Young but I will try to explain it for you. You will all have heard of 40 track and 80 track drives but what about 36 track? or even 85 track? well both exist (and of course Nev has to have the unusual) and the DOS will format them if the number of tracks is set by POKE @1 (or @2 for drive 2) remember to add 128 if the drive is double sided. But the CAT command contains a routine which if POKE @1 is not 40, 80 or 168 then 208 is assumed when calculating the free space left on the disc. Not to be thwarted Nev set out and wrote a new free space routine and even managed to make it two bytes shorter than the original. Alright so yours is a standard size drive, but you could format a disc to say 20 tracks if you want and with the new routine you will get a true picture of the space you have left.

Now I hear you say 'Is this ever going to end?'. Just bear with me for a few more small items. I have included that POKEs that amend GDOS 3a to 3b, these cured problem with returning from Snapshots with the interrupts set the wrong way round. These were originally published in issue 3. Also included is the keyscan patch (cuts out the call to the mouse routine that can cause problems) and the SCREEN$(1) patch that cures the all black printout on some screens, see the help page in issue 8 for a full explanation..

Finally two more improvements. If you say yes to a printer when you set up your system file but then don't have a printer on line when you boot your system the DISCiPLE will hang up. Its trying to send the initialization codes but can't. A patch is included to get round this by testing for the printer and bypassing the initialize section if either no printer is found or the printer is off-line. This makes it operate in the same way as the old version 2c or the new PLUS D.

For the last modification I have to thank Walter Kelly for some real detective work. Anyone with a 128k or +2 will know that when the DISCiPLE reaches the end of a file copy it does a RANDOMISE USR 0. This has the annoying effect of dropping you into 48k mode so you need to press the reset button before you get back to 128k mode. Walter's neat solution is the result of long hours searching disassemblies of the DISCiPLE system and the 128k ROM. It allows the DISCiPLE to test to see which mode the Spectrum was in before the SAVE...TO... was issued, and then if it was 128k mode return instead to the front menu (just like NEW) so you don't need to press reset.

The last poke resets the DOS version letter to 'c'. Well thats it, the result of several weeks of effort, I hope you will be

pleased with the improvements. I would like to thank Walter Kelly for his help and of course Nev Young without whom this article would never have got going (let alone finished).

The next step is to type in the listing and run it. While some parts are really optional I would recommend that the whole update is entered to ensure future compatability with articles in FORMAT.

```
    1 REM GDOS 3c UPGRADE
    2 REM (C)1988 INDUG.
    3 REM All rights reserved.
    4 REM
    5 REM Converts 3a or 3b
    6 REM system file to 3c.
    7 REM Includes 3a to 3b pokes
    8 REM given in FORMAT #3 October 1987.
    9 REM
   10 RESTORE
   20 READ ADDRESS
   30 IF ADDRESS=99999 THEN GOTO 1000
   40 READ BYTE
   50 IF BYTE=-1 THEN GOTO 20
   60 POKE @ADDRESS,BYTE
   70 LET ADDRESS=ADDRESS+1
   80 GOTO 40
   90 REM
  100 REM *** PRINTER INITILIZE PATCH ***
  101 DATA 4932,205,221,40,201,58,163,2,167,32,5,219,31,203,119,1
92,55,201,-1
  102 DATA 478,205,224,21,216,0,-1
  109 REM
  110 REM *** INTERRUPT PATCH ***
  111 DATA 65372,243,0,0,-1
  112 DATA 407,251,0,0,33,118,27,-1
  119 REM
  120 REM *** OTFOC PATCH ***
  121 DATA 65519,167,202,97,18,195,12,20,-1
  122 DATA 665,135,2,-1
  129 REM
  130 REM *** D2 STREAM PATCH ***
  131 DATA 4183,205,132,41,0,0,-1
  132 DATA 4269,205,132,41,0,0,0,-1
  133 DATA 4784,205,132,41,201,205,57,21,195,168,41,205,76,21,205
,47,13,201,205,121,21,195,201,41,205,57,21,195,156,41,205,121,21
,195,165,41,205,57,21,-1
  134 DATA 627,57,21,76,21,82,21,195,41,89,21,129,41,68,25,76,22,
95,21,162,41,101,21,196,21,189,21,186,41,107,21,178,22,170,8,130
,21,160,21,135,2,53,5,-1
  135 DATA 4169,202,0,22,-1
  136 DATA 4968,229,42,150,2,124,181,202,61,19,195,88,41,-1
  139 REM
  140 REM *** FREE SPACE PATCH ***
  141 DATA 1616,197,203,127,40,1,135,214,4,33,0,0,6,10,22,0,95,25
,16,253,193,0,0,-1
  149 REM
  150 REM *** SCREEN$ (1) PATCH ***
  151 DATA 5322,241,62,56,-1
```

```
159 REM
160 REM *** KEYSCAN PATCH ***
161 DATA 99,0,0,0,-1
169 REM
170 REM *** CLOSE# PATCH ***
171 DATA 4513,205,237,21,-1
172 DATA 4949,221,94,17,221,86,18,221,126,11,50,206,26,205,198,
41,205,129,41,201,-1
179 REM
180 REM *** 128k RETURN PATCH ***
181 DATA 1322,195,12,22,-1
182 DATA 4980,253,203,1,102,202,79,0,205,0,91,243,1,199,0,195,7
0,0,-1
189 REM
500 REM *** UPDATE VERSION ***
501 DATA 5960,99,-1,99999
1000 REM SAVE NEW SYSTEM TO DISC
1010 SAVE d1"Sys 3c"CODE 0,6656
1020 PRINT "ALL DONE"
1030 STOP
```

PLUS D owners, do not dispair, a major update to cure the OPENTYPE file problems, and a few other bits and pieces will appear soon.

If you are aware of any other 'bugs' in the DISCiPLE (v3) or PLUS D why not drop me a line. Give as many details as possible and include a program to demonstrate the bug if possible. A solution is not guaranteed, but I will try.

* - * - * - *

BACK ISSUES

For members who have missed past issues of FORMAT (or perhaps worn theirs out through constant use) we run a back-issue service.

The cost is 65p per copy (85p overseas) which includes postage. Your copies will be sent out as soon as possible but, in order to keep printing costs down, it may take up to 21 days for us to dispatch. Make cheques (drawn on UK bank or Euro-Cheques) payable to INDUG.

Available Issues

Issue 1 - August 1987.   Issue 6 - January 1988.
Issue 2 - September 1987.   Issue 7 - February 1988.
Issue 3 - October 1987.   Issue 8 - March 1988.
Issue 4 - November 1987.   Issue 9 - April 1988.
Issue 5 - December 1987.

Please WRITE YOUR ORDER ON A SAPERATE PIECE OFF PAPER. DO NOT include correspondence with orders.

THE MICRONET PAGE

A MONTHLY FEATURE

By: Patrick McMahon.

In this months article I will be looking at the various Gateway and Chatline facilities available on Micronet and Prestel.

First the chatlines, of which there are quite a few. Most of the chatlines are for anyone to discuss whatever topic takes their fancy; provided there is someone else on there to talk to. Recently there was an interesting discussion on B.T. censorship on Micronet. It turns out that every Mailbox sent on Micronet goes to a central computer to be read by B.T. personnel. However, even if something is found to be breaking the rules laid down by Micronet nothing can be done as Micronet are not supposed to censor the electronic mail anyway. This and other things came out in a longer than usual exchange of views; which shows how concerned people were on the subject of censorship.

Fig 1
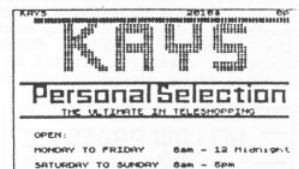
Fig 2

Examples of these kind of Chatlines are Turbo One and Two. There are quite a few regular users of Turbo One who seem to spend all day and every day on the chatline. One in particular is someone called "Knobbo". He has been on Turbo One every single time I've connected, at different times I might add. Other regular users are Shaggy, Stingray and Cammy all of whom must have terrific phone bills. I have to mention that all the people using the chatlines are always helpful. This is especially true when you are new and don't know your way around. I remember the first time I tried using the chatline; Knobbo, in particular, was extremely helpful in showing me the ropes.

Other types of chatlines concentrate on particular computers. One example is 'Lip-Sinc' a recent addition to existing chatlines. It is specifically for the Sinclair Computers, if you hadn't guessed from the name, incidentally this was chosen from a load of suggestions sent in by people using the Spectrum Microbase. On the 12th of March there was a discussion on the new MGT SAM computer. Chris Lewis and Patman from the Spectrum

Microbase went to see the prototype so that they could answer questions of Micronetters who were curious about it. A useful and beneficial discussion on the new machine, which looks like an extremely good buy.
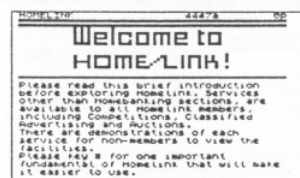
Fig 3
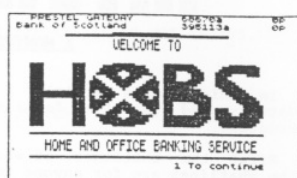
Fig 4

Now for the second part of the article, the Gateways on Micronet available to users. These range from Teleshopping to Databases of information. (See Fig 1). Many of the major mail order catalogues have Gateways which the user can connect to, at a price or sometimes absolutely free. Some examples of these are Kays, Littlewoods and Homelink (see Fig 2&3) which offer all the products in their catalogues on Micronet pages. You then order what you want by filling in a response frame and paying for the goods by Credit Card or by means of your existing account with the Company concerned. This type of thing brings armchair shopping, where you can sit at home and order what you want, whether it be a paper or the weeks shopping, ever nearer.

Fig 5
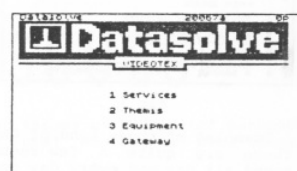
Fig 6

The other type of Gateways, specialise as information providers, either for a particular company, eg Commercial Union or The Bank of Scotland (see Fig 4) or they simply provide information useful to everyone like the newly installed Electronic Yellow Pages (see Fig 5). This offers all the names and addresses of businesses, just like its paper counterpart, only it is perhaps easier to use. The service only covers the London area at the moment but it will hopefully cover the whole of the U.K. in the near future. There is also another type of Gateway, called Datasolve, a sort of electronic quiz(See Fig 6).

That's all for this month, next month I shall be looking in more detail at Electronic mail services - Mailboxes and Telex - available on Micronet.

EXPANDING GENS

PART 4.

By: DAVE KENNEDY.

This months installment of EXPANDING GENS continues the code for the new commands described in the last issue.

```
2980              CP ","
2990              JR NZ,LIST5
3000              DJNZ LIST5
3010 LIST6        LD A,(DE)           ;now at start of heading
3020              CP 13               ;newline at heading end
3030              JR Z,LIST7
3040              RST 16              ;print heading
3050              DEC C               ;spacer counter
3060              INC DE
3070              JR LIST6
3080 LIST7        INC C               ;in case already zero
3090              LD B,C              ;spaces to print before "page:"
3100 LIST8        LD A," "
3110              RST 16              ;pad out heading with spaces
3120              DJNZ LIST8
3130              LD B,3              ;end underline mode & print "page:"
3140 M9           CALL PRINTER-DK
3150              LD A," "
3160              RST 16
3170              PUSH HL
3180 M10          LD HL,BUFFER+3      ;onto next page number
3190              INC (HL)
3200              LD C,(HL)
3210
3220              LD B,0              ;"bc" = page number
3230              CALL E1A1B          ;print value of "bc"
3240              POP HL
3250              LD A,13
3260              RST 16
3270              LD A,13
3280              RST 16              ;2 newlines
3290 M11          LD A,(NUM1)         ;= number of lines per page
3300              LD B,A
3310 LIST9        PUSH BC             ;save page line counter
3320 M12          CALL LINEPRINT-DK   ;llist one line
3330              POP BC              ;recover page line counter
3340              RET NZ              ;abandon printing if a key pressed
3350 M13          CALL HLEND          ;"hl"-(txtend)
3360              RET NC              ;if at end of textfile
3370              DJNZ LIST9          ;else repeat until one page printed
3380 M14          LD A,(NUM2)         ;number of newlines between pages
3390              LD B,A
3400 LIST10       LD A,13
```

```
3410            RST 16
3420            DJNZ LIST10
3430            PUSH HL          ;save textfile position
3440            XOR A
3450            CALL £1601       ;select lower screen
3460            LD A,209         ;"move"
3470            RST 16
3480            LD A,218         ;"paper"
3490 M15        CALL ERASE3-DK   ;"beep!" & await keypress
3500            CALL £0D6E       ;cls-lower screen only
3510            LD A,3
3520            CALL £1601       ;reselect printer
3530            POP HL           ;recover textfile position
3540            JR LIST4         ;& continue to print next page
3550
3560 LINEPR     LD C,(HL)
3570            INC HL
3580            LD B,(HL)        ;text line number
3590            INC HL
3600            PUSH HL          ;save text posn.
3610            CALL £2D2B       ;put "bc" on calculator stack
3620            CALL £2032       ;print number off calc. stack
3630            POP HL
3640            LD BC,£0300      ;b=3 for label, mnemonic & comment
3650 LINE1      LD A,ESC         ;fields
3660            RST 16
3670            LD A,TAB         ;goto to next tab position
3680 LINE2      RST 16
3690            LD A,(HL)
3700            INC HL
3710            CP 13            ;test for line end
3720            JR Z,LINE7
3730            CP TAB           ;test = chr$ 9 which asm. puts in
3740            JR NZ,LINE3      ;when space or right curser input
3750            BIT 0,B          ;if b = 2 then in mnemonic field
3760            JR NZ,LINE4
3770            LD A," "         ;so convert chr$ 9 into a space
3780 LINE3      CP 59            ; ";" = comments
3790            JR NZ,LINE5
3800            LD C,£20         ;if in comment field ensure "c"=32
3810            DEC HL           ;until b = 1 for comment field
3820 LINE4      DJNZ LINE1       ;if "b" = 0 then at comment field
3830            INC HL           ;so bypass ";" character
3840            JR LINE2
3850 LINE5      CP "A"
3860            JR C,LINE2
3870            CP "Z"+1         ;check for upper-case character
3880            JR NC,LINE2
3890            OR C             ;unchange unless in comment field
3900            JR LINE2         ;when "c"=32 converts to lower case
3910 LINE7      RST 16           ;newline
3920            PUSH HL          ;save text position
3930            RST 8            ;m/drive keyboard test hook-code
3940            DEFB £20         ;zero flag set if no keypress
3950            POP HL           ;recover text position
3960            RET              ;& return for flag test
3970
3980 PRINTE     PUSH HL          ;lprint from message list
```

16

```
3990 M16        LD HL,PNTDATA-DK
4000 PRINT1     BIT 7,(HL)       ;bit 7 set at each message end
4010            INC HL
4020            JR Z,PRINT1
4030 PRINT2     DJNZ PRINT1      ;if b = 0 then at required message
4040 PRINT3     LD A,ESC         ;lprint escape character for each
4050            RST 16           ;code in case less than chr$ 31
4060            LD A,(HL)
4070            AND 127          ;convert message end-marker
4080            RST 16
4090            BIT 7,(HL)       ;test for message end
4100            INC HL
4110            JR Z,PRINT3      ;& continue if not at message end
4120            POP HL           ;recover text position
4130            RET
4140
4150
4160 MOVER      CALL FNDADR      ;de=addr of num1 hl=num2-num1 addr
4170            JR C,ERR1        ;if num2 < num1
4180 M18        LD (NUM1),DE     ;store start line address
4190            PUSH DE          ;start
4200            ADD HL,DE
4210            DEC HL           ;reform and
4220 M19        LD (NUM2),HL     ;store end line address
4230            PUSH HL          ;end line
4240 M20        LD HL,BUFFER+3   ;location of move to line text
4250 M21        CALL BINARY      ;convert ascii to value in "hl"
4260            LD B,H
4270            LD C,L
4280            INC BC
4290 M22        CALL FNDNUM      ;line no. "bc" to address in "hl"
4300 M23        LD (BUFFER+3),HL ;store move to address
4310            POP BC           ;end line
4320            POP DE           ;start line
4330            AND A
4340            SBC HL,DE        ;move line - start line
4350            JR C,MOVER1      ;end test if move < start
4360            ADD HL,DE        ;reform move
4370            AND A
4380            SBC HL,BC        ;move - end
4390            JR C,ERR1        ;error if start < move < end
4400 MOVER1     LD H,B           ;end
4410            LD L,C
4420            AND A
4430            SBC HL,DE        ;end - start
4440            LD B,H
4450            LD C,L
4460            INC BC           ;difference
4470            PUSH DE          ;start
4480            LD DE,6910       ;max. move size
4490            AND A            ;using screen as temp. store
4500            SBC HL,DE
4510            POP DE           ;start
4520            JR C,CONT        ;block of lines > screen store
```

Space has run out on me again this month but you will be pleased to hear the end is in sight. Next month will see that last section of source code, so see you next time.

17

FORMAT SOFTWARE SERVICE

FORMATs Software Service provides DISCiPLE and PLUS D owners with a growing range of software specially designed for their systems.

The software is supplied on tape, for easy transfer to any format/size of disc, thus keeping costs as low as possible.

Tape No	Title	Program Description
T001	LCOPY	Routines to replace the GDOS printer dump routines in your system file. Enables Epson compatible printers without Esc * to be used with both SCREEN$ 1 & 2 and SNAPSHOT prints.
T002	MULTI-POKE	Program to display and edit 48K SNAPSHOT files. Full facilities for entering published POKEs i.e. Infinite Lives etc. Makes use of printer if attached.
T003	G-HACKER	A graphic investigator. Look inside commercial programs, find the Sprites and pictures. Works in 48K mode but will handle many 128K programs.
T004	I.B.U.	The highly successful 'Incremental Backup Utility', written by Nev Young. As featured in Issues 5,6,7 & 8 of FORMAT.
T005	TAPE-SNAP	Transfer 48k Snapshots to tape with this easy to use program. Transferred Snaps will reload and run without the disc system present.
T006	ART STUDIO	A conversion program for the OCP ART STUDIO. Configure Art Studio in the normal way then run this program to convert to disc operation.

Each tape, costs £3.95 including postage or £4.95 for overseas members. Instructions are supplied where needed and all tapes are professionally recorded.

Send your order (on a separate piece of paper please), clearly stating the Tape Number; Title; Quantity required and your membership number, to:- INDUG (FSS), 34 Bourton Road, Gloucester, GL4 0LE, England. Payment in STERLING by Cheque (payable to INDUG and drawn on a UK bank), Postal Orders, Euro Cheques or Cash accepted. Please allow 28 days for delivery.

DO NOT ENCLOSE CORRESPONDENCE WITH ORDERS.

EASY-READ

By: Jon Nixon.

Most users will know that things like colour control characters can be inserted into the lines of a 48k Basic program. This not only gives colourful listing, very useful in its own right, but also saves all those long winded PAPER 1 INK 7 BRIGHT 1 controls in PRINT statements.

The problem comes when you want to send a printed listing to magazines like FORMAT. The LLIST command ignores all inbedded codes and, of course, no printer would be able to print them anyway. My solution is 'EASY READ' a small program to give listings with control codes that can be understood. As you will see from the listing itself when the program comes across an enbedded control (or selected other characters) it converts them. The output consists of a '{', the command and then a '}' to finish off. The commands work like this:-

```
E  = Extended Mode
S  = Caps Shift
G  = Graphic Mode
SS = Symbol Shift
```

All followed by a key to be pressed.

So {ES 4} means enter Extended Mode then press Caps Shift and 4, this gives the control code for green ink. {G A} tells you to enter graphic mode then press A, that is the first of the UDGs. {INV VID} and {TRUE VID} are also given and I have also added conversion or £,# and the copyright sign as not all printers can cope with them.

To use the program you need to create an OPENTYPE file by, OPEN#4;d1"AFILE" OUT, then LIST #4 to get your listing into the file. Now close the file by CLOSE#*4 and load EASY READ. The program will copy the selected file to a new file converting as it goes, a copy of the text is also printed to the screen. When finished you can print the file at any time by MOVE d1"CONV FILE" TO #3.

```
10 REM {INV VID}'EASY READ' LISTER v2.7{TRUE VID}
20 REM {INV VID}(C)1988 INDUG.{TRUE VID}
30 REM {INV VID}By Jon Nixon.{TRUE VID}
40 REM
50 REM ** get file names. **
60 BORDER 1: PAPER 1: INK 7: CLS
70 INPUT "{E 3}INPUT Filename?{E 1} ";I$'"Drive No? ";id
80 PRINT "{E 3}INPUT FILE = {E 1}";I$;TAB 23;"{E 3}Drive = {E 1}";ID
```

```
   90 INPUT "{E 2}Name of OUTPUT File?{E 1} ";O$'"Drive No? ";OD
  100 PRINT "{E 3}OUTPUT FILE = {E 1}";O$;TAB 23;"{E 3}Drive = {E
1}";OD
  110 REM ** open both files **
  120 OPEN #4;DID;I$IN
  130 OPEN #5;DOD;O$ OUT
  135 REM ** test for end of file **
  140 LET OFFSET=PEEK (23574+4*2)+256*PEEK (23575+4*2)
  150 LET CHANADR=PEEK (23631)+256*PEEK (23632)+OFFSET-1
  160 LET CL=PEEK (CHANADR+31)+256*PEEK (CHANADR+32)+65536*PEEK (
CHANADR+18)
  170 IF CL=0 THEN GOTO 460: REM ** if end of file goto finish **
  180 REM read byte from input file
  190 LET I$=INKEY$({SS 3}4: REM ** read character from file **
  200 LET BYTE=CODE I$
  210 IF BYTE>=144 AND BYTE<=161 THEN LET I$="{G "+CHR$ (BYTE-79)
+")": REM UDG's
  215 REM ** now test for each special character type in turn. **
  220 IF BYTE>=128 AND BYTE<=143 THEN GOSUB 350: REM a BLOCK grap
hic character
  230 IF BYTE=16 THEN LET BYTE=CODE INKEY$({SS 3}4: LET I$="{ES "+
STR$ BYTE+")": REM = INK control
  240 IF BYTE=17 THEN LET BYTE=CODE INKEY$({SS 3}4: LET I$="{E "+S
TR$ BYTE+")": REM = PAPER control
  250 IF BYTE=18 THEN LET BYTE=CODE INKEY$({SS 3}4: LET I$="{ES "+
STR$ (8+BYTE)+")": REM  FLASH control
  260 IF BYTE=19 THEN LET BYTE=CODE INKEY$({SS 3}4: LET I$="{E "+S
TR$ (8+BYTE)+")": REM  BRIGHT control
  270 IF BYTE=20 THEN LET BYTE=CODE INKEY$({SS 3}4: LET I$="{TRUE
VID}": IF BYTE=1
THEN LET I$="{INV VID}": REM inverse control
  280 IF BYTE=127 THEN LET I$="{ESS P}": REM COPYRIGHT
  290 IF BYTE=96 THEN LET I$="{SS X}": REM POUND SIGN
  300 IF BYTE=35 THEN LET I$="{SS 3}": REM HASH SIGN
  310:
  320 PRINT I$;: REM to screen
  330 PRINT {SS 3}5;I$;: REM to file
  340 GOTO 160: REM loop for next character
  350 REM {INV VID}BLOCK GRAPHICS{TRUE VID}
  360 IF BYTE=128 THEN LET I$="{G 8}"
  370 IF BYTE=143 THEN LET I$="{GS 8}"
  380 IF BYTE>=129 AND BYTE<=135 THEN LET I$="{G "+CHR$ (BYTE-80)
+")"
  390 IF BYTE=142 THEN LET I$="{GS 1}"
  400 IF BYTE=141 THEN LET I$="{GS 2}"
  410 IF BYTE=140 THEN LET I$="{GS 3}"
  420 IF BYTE=139 THEN LET I$="{GS4}"
  430 IF BYTE=138 THEN LET I$="{GS 5}"
  440 IF BYTE=137 THEN LET I$="{GS 6}"
  450 IF BYTE=136 THEN LET I$="{GS 7}"
  451 RETURN
  460 CLOSE #*4: CLOSE #*5
  470 PRINT "{E 2}ALL DONE{E 1}"
```

The listing could be expanded or modified to suit individual needs and is not (except for the file access) peculiar to the DISCiPLE / PLUS D, I wrote this several years ago to work on microdrives.

DCOPY

By: Bob Brenchley.

A few weeks ago I had a small routine sent in by Mr A.D.Webb of London SW2. The routine was an EXECUTE FILE for the DISCiPLE (version 3a and above) which gave an ASCII screen copy for either a daisy wheel printer or a dot matrix printer that doesn't have Bit Image Graphics. The routine worked very well and I put it aside to use on a 'Hints & Tips' page (Oh for more hints and tips so I can make it a monthly feature).

However on closer examination I felt that a little rewrite would make the routine relocatable so it would work on the PLUS D as well, this article is the result. The routine is well annotated so it should give you some ideas for other Execute files.

Execute files are small machine code routines that load and run in the disc buffer in the interfaces RAM. They have to be assembled to run at location 7126 on the DISCiPLE or 15318 on the PLUS D. All calls to the main ROM are made with an RST 16 call followed by DEFW nnnn where nnnn is the address of the routine you are calling.

Enter the source listing into your favourite assembler (I use a modified OCP Editor/Assembler) and assemble to an address in the Spectrums RAM (lets say 50000). Then save the routine by SAVE d1"DCOPY"X,50000 if you don't use an assembler you can type in the basic loader give at the end.

To use the routine just insert the command LOAD d1"DCOPY"X it can be used in place of and COPY or SAVE SCREEN$ command in a program. Only ASCII characters are copied, others print as spaces.

```
00010
00020   ; DCOPY - By Bob Brenchley. From an idea by A.D.Webb.
00040
00050   ; (c)1988 INDUG.
00060
00080   START   LD    A,3        ;First load 3 into the a register and
00090           RST   16         ;call the Spectrums ROM to open the
00100           DEFW  5633       ;printer channel.
00110
00120           LD    BC,0       ;B=COLUMN, C=LINE both zero to start.
00130   LOOP    PUSH  BC         ;Save current position.
00140
00150           RST   16         ;Now call main ROM to do a SCREEN$
00160           DEFW  9528       ;command.
00170
00180           RST   16         ;Call the main ROM to fetch the
```

```
00190           DEFW 11249    ;string parameters from the Stack.
00210
00220 PR_STR LD   A,B         ;Next test the length (in BC) off
00230        OR   C           ;the string produced by SCREEN$.
00240
00250        LD   A,32        ;Load a space into the A register.
00260
00270        JR   Z,P2        ;If the string length was zero then
00280                         ;jump to P2 and print the space as
00280                         ;the character is not ASCII.
00290
00300        LD   A,(DE)      ;Load the character to be printed.
00310
00320 P2     RST  16          ;Call the main ROM to print the
00330        DEFW 16          ;character or the space.
00340
00360        POP  BC          ;Recover the co-ords.
00380        LD   A,31        ;Load A with 31 and test to see if
00390        CP   B           ;its the end of a line.
00400        JR   Z,NXTLN     ;If so jump to NXTLN.
00410        INC  B           ;If not point to next character
00420        JR   LOOP        ;and loop through the routine.
00430
00440 NXTLN  LD   A,13        ;Load a with a Carriage Return
00450        RST  16          ;and call the Spectrums ROM to print
00460        DEFW 16          ;it.
00470
00480        LD   A,21        ;Load A with 21 and test to see if
00490        CP   C           ;thats the last line.
00500        JR   Z,LASTLN
00510        INC  C           ;If not, point to the next line
00520        XOR  A           ;and reset the column count
00530        LD   B,A         ;to zero.
00540        JR   LOOP        ;Now go and print another line.
00550
00560 LASTLN LD   A,13        ;Print an extra Carriage Return
00570        RST  16          ;just to make sure the printers
00580        DEFW 16          ;buffer is cleared.
00590
00600        LD   A,2         ;Finally reset the current
00610        RST  16          ;channel back to 2 (the main screen).
00620        DEFW 5633        ;
00630
00640        RET              ;And then return to Basic.
00650
00660 LEN    EQU  $-START
```

BASIC LOADER

```
 10 FOR I=50000 TO 50059
 20 READ N
 30 POKE I,N
 40 NEXT I
 50 DATA 62,3,215,1,22,1,0,0,197,215,56,37,215,241,43,120,177,62
,32,40,1,26,215,16,0,193,62,31,184,40,3,4,24,230,62,13,215,16,0,
62,21,185,40,5,12,175,71,24,215,62,13,215,16,0,62,2,215,1,22,201
 60 SAVE d1"DCOPY"X,50000
```

INCREMENTAL UPDATE BACKUP UTILITY

By: NEV YOUNG.

In the months since IBU was first written two problems have reared their ugly heads. Neither problem is serious and they can both be resolved with a few line changes to the basic section of the program.

The first problem only affects those of us who use OPENTYPE files. It would appear that the header byte 210 that IBU uses to mark a file as backed up is also used as a size extension byte for these files. This has the effect, for small files, of increasing their size by 256*65536 bytes (making it a VERY BIG file. The fix is quite simple. On lines 870, 910, 1150 and 1155 replace the number 210 with 209. This will also, unfortunately, mark all files as not backed up so the next run of IBU will be a good time for a cup of tea.

The second problem actually lies within the DISCiPLE/PLUS D ROM, but only affects those who have two, double sided, disc drives. The ROM program only stores one current track register, so when you switch discs the ROM will think that the head of the new drive is on the track where the old drive head was. It will therefore re-position the heads. It then realises its mistake and moves them back to the correct place. This is an annoyance but does no real harm unless you are near the last track of the disc, as would happen if you are using IBU to copy a file that starts on side 1 and finishes on side 2. As IBU copies about 6 tracks at a time (12 for single density on the DISCiPLE) the heads on the source disc can quite easily be 70 tracks away from the heads on the destination disc. As a result the ROM will try to move the destination disc heads 70 tracks out, but as they are already somewhere near track 75 this only results in a format data lost message as the heads are moved off the end of the disc.

The cure is either to twist Bruce Gordon's arm to re-issue the ROM with a fix or add the following 4 lines to IBU.

```
1165 LET dpos = IN 91
1275 LET spos = IN 91
4215 IF sourcedisc <> destdisc THEN LET spos=IN 91: OUT 91,dpos
4255 IF sourcedisc <> destdisc THEN LET dpos=IN 91: OUT 91,spos
```

This will keep a note of the tracks, and stop the seeks that cause the problem.

If you have a PLUS D then replace each 91 in the above lines with the number 235.

I hope these enhancements will prove useful.