NATGUG NEWS

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OFFICIAL JOURNAL OF THE

National TRS-80

& Genie Users

Group.

INFORMATION ON THE GROUP

Membership of the group is by subscription to the Newsletter, which is published monthly. Membership details are obtainable from the Group Secretary. Membership of the group is open to anyone with an interest in computers but special emphasis is placed on equipment in the TANDY range.

Details of the Group accounts, and the constitution of the Group, are available from the Secretary.

Members requiring assistance with problems related to the TRS-80 / Video Genie may call the Secretary. An attempt will be made to put them in touch with a member who can help with the problem.

Workshops are arranged from time to time in various parts of the country.

Sub-groups exist in many areas. A list is provided in the Newsletter from time to time.

The Group maintains two software libraries (Models I and II) which are free to members. Library lists are available from the Secretary.

For confidentiality reasons, the membership list is not generally available, but members may ask the secretary for a list of members in their area, and mailshots to all members may be arranged.

Back numbers of the Newsletter are available from the Secretary.

Please send all contributions for the Newsletter to the Editor, on disk if at all possible (5.25", NEWDOS-80 v2 or Montezuma Micro CP/M preferred, any combination of density, sides or tracks, but please say what it is). Your disk will be returned.

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EDITORIAL

The phone lines have been a little busier this week than normal, the 2nd PC 1512 review seemed to rattle Leon Heller's cage a little and he rang to say that my colleague who allowed me to reproduce his preliminary report had completely got the wrong end of the stick ! The only point of Leons' that I could agree with was that it was just as easy to accidentally pull the plug on the IBM as on the Amstrad and thus loose hard disk contents. The other points he raised seemed to me to arise from HIS misinterpretation of the article. Anyway I've asked him to write a reply stating his comments.

Also I've received more than one call from members who are concerned that perhaps Brian is wearing too many hats - and that he may be concentrating his efforts on QLUG to the detriment of NATGUG. It was pointed out to me that QLUG have a mention on CEEFAX, we don't, and that QLUG recently had a jolly good plug in PCW's ACC column, and when was the last time we had a mention. Both correspondents were concerned that the group might fold without strong direction and leadership. I would also point out that at no AGM that I've attended, has anyone else stood up to volounteer their services for the role of Secretary, Publisher and General Dogs-body as Brian has done since the groups' inception. I also personally find it irritating that at least 50% of those who are present at a Swindon or MK meeting are much more concerned with ripping off software than playing a part in the future of their group by attending the AGM, surely this is common courtesy to those who do put in unpaid time and effort on their behalf. So if at all possible, please make the effort to get to Swindon and attend the AGM - remember the old adage 'When apathy reigns we ALL get wet!'. Also bear in mind that we will need another volounteer to take over as Editor of the magazine since I will be 'retiring' from the post in April.

Software news.

I recently had to begin to put together some graphics routines for some Turbo PASCAL programs that I've written. My main system is a PC - clone with Hercules graphics and as such the graphics routines in standard Turbo do not allow access to this board only CGA boards. There are some PD routines around that are supposed to allow access but I did not have a great deal of success with these. So I purchased a copy of Borlands Turbo Graphix Toolbox (Grey Matter £39) and my initial impressions are very good (I've had it about two weeks now). It consists of about 10 modules, comprising over 3500 lines of code almost all of which is written in Turbo itself, (the link to the graphics board and some of the more calculation intensive routines such as irregular shape fills are in-line machine code). Since the majority of the routines are in the form of PASCAL procedures, you really can treat it as a toolbox and just use and modify the bits you want. The original programmers believed in long descriptive variable names so there is no problem with identifying what is being referred to.

Not only do you get expected things such as point to point draw, circles squares etc., there is very extensive window support, pie and bar chart generation, polygonial curve plotting, spline and bezier curve fitting, the latter three with the option of automatic axis generation. Procedures are provided to move curves and windows dynamically. With respect to text there are two character sets, one somewhat crude in a 4 x 6 pixel matrix that is used mainly for window labels etc, but may be enlarged and set on any pixel boundary. The other is 9 x 14 for Hercules cards 8 x 8 for most others. This to my eye gives a very attractive font. Routines are also provided to dump the graphics screen to Epson type printers. The main systems supported are IBM CGA and EGA with resolution of 640 x 200, Hercules with a resolution of 720 x 350 and Zenith with a resolution of 640 x 225. A highly recommended package.

For those of you who still prefer BASIC Borland are releasing a Turbo BASIC, compiled of course, with the usual Turbo programming environment. I've not seen it in operation as yet or seen any reviews, but I would bet on it being very pleasant to work with and pretty powerful as well. I don't know if it will be available for 8 bit CPM, but Turbo Modula-2 for CPM-80 has been released in the States, so there is still some degree of support for the old guard. Still on the language scene, I note that MIX who produced the excellent and very competitively priced C compiler for both 8 and 16 bit systems, have just released Ctrace, a windowing debugger for their C-compiler. This sort of aid should make C program development a lot easier, since virtually all debugging had to be done at the assembler level.

I've recently seen two very disturbing reports of so-called anti-piracy software devices. The first is a program that has been slipped into the public domain under the name SUG.ARC or SUG.COM and puports to be a Softguard unprotection device. It invites you to put your ORIGINAL Softguard disk in the drive and then proceeds to destroy the contents of that disk and any other that you have online such as your hard disk! Having done so it displays a message telling you what it has done, that it really has been put out by Softguard Systems Inc. and inviting you to contact their lawyers if you have any complaints - So beware. The second concerns a BIOS speed up chip for PC compatibles by Softpatch Ltd. Apparently if you attempt to alter the LOGO of the firmware this produces a so called delayed worm which some time later will eat up your hard disk. I don't believe this sort of behaviour can be justified and hope someone takes the b..'s to court for all the damages they can get.

Finally many thanks to our new contributor to the mag (Optica) who despite his own fears, put together a very readable article. Please follow suit, take your courage, keyboard or pen in both hands and put something down for the mag. We desperately need contributions to keep going.

Readers Letters.

Allan Fowke
28 Queensway
Sawston
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CB2 4DJ

Dear Ed.,

I run a Genie I with a Gnomic DP2000 and a Cumana disk drive. It has internal upgrades, Gnomic 48k and Eric Hartley's RS232. During the three years that I have been running this system I have suffered intermittent disk faults. Essentially I lose sector markings, usually on directory tracks, or on data disks where there is some sector reading and re-writing going on. Once a fault appears the sector concerned will not read or write even with DEBUG.

I have tried cleaning the drives. I have also tried cleaning all the connectors with a fibre glass eraser and smearing them with silicone grease. I suspect that I have an intermittent hardware fault which corrupts the sector label, probably overwriting it with data.

As I know the Gnomic DP2000 is reputed to have an inadequate power supply I have just changed this. The old 18 VA 6-0-6 transformer did drive both the Canon drive and the Gnomic controller board, which includes the double density conversion. I have added a second 6-0-6 18VA transformer and 2A bridge rectifier to supply the +5V and +12V regulators on the control board independently. I have also left the separate 6V winding on the original transformer to supply the -5V zener on the control board.

These changes have not solved the problem. I have just had another failure on a data disk used for repeated changes in a BASIC data base program. This was even left as single density to reduce the risk of disk failure.

If anyone has any ideas which might help, I would appreciate suggestions. Also if anyone has a disk controller set up, Gnomic or expansion Box, for sale I would be interested,

yours sincerly

Allan Fowke.

NATGUG'S FUTURE.

One member has suggested that the running of the group ought to be completely reorganised. If anyone is interested in this subject please give me or Roger Storrs a ring. I decided that there was no point in filling the mag with one person's views etc.

Brian Pain

OGGY OGGY OGGY

Sorry I missed the last issue, 'cos now you'll only get two reminders for Swindon 87! MARCH 13th - 15th it will be and you can book now if you care to ring 0793 28282.

Geof has already described (last issue) some of the highlights of our October meeting at the Wiltshire Hotel, and those who didn't attend missed a fair corker, what with Simul80 lasting well into the Sunday morning, Ariela's lap top Toshiba, Tony Evetts Model 3000 demonstrating CADCAM, (I loved that super high-resolution blowup of a locomotive) to say nothing of Paul Ostwind and Geoff Smith's FONTASY. However I would say the most marvellous sight for me was the fantastic job that Brian Edwards has done for the hi-res model 4, screen-dumping Dotwriter fonts; for me this is far better than FONTASY, well done Brian.

Chris Currie had done some very hard work on an 80-Micro listing to get some excellent Epson printouts and will be demonstrating his map digitising techniques in March. John Newgas turned up with full family reinforcements but gave an unaided talk on Turbo Pascal which was to his usual high standards. John Butcher allowed himself to be pressured into standing in for Colin Ashford (who spoke on Saturday about Comms Standards) and gave a good demonstration of Wordstar commands - well done, John, sorry about the short notice ! With Laurie and Ariela devoting themselves to their specialist subjects, and Tony Evetts covering ZBASIC, Geof Smith on Cardbox, SWINDON 86 was as successful as ever thanks to all who put in such a marvellous effort. However, I would point out that we didn't even drink half of the "refresh" which was provided for Simul-80 !

I DO listen when people talk to me, although they might not always think so ! I did hear the comments - or should I be ungallant and say excuses - about how various members couldn't possibly meet Geof's terribly hard disk format criteria, and so therefore they couldn't make their contibutions to NATGUG after all. Now, PLEASE, read this bit slowly and carefully - Geof will accept contibutions on **ANY** recognisable TRS-80 5.25" disk format if you would be so kind as to give him a clue as to which particular format that you've used. Don't worry too much about ASCII - if you use your usual word processor then that will almost certainly be quite OK, he can edit the commands to suit his own editor. Put a piece of hard card in with the disk, enclose a sticky label with your own address on it, and your disk will be back with you before you even realise that you've lost it ! Any of you who are still not convinced, please look at a copy of Natgug produced before Geof took over; no disrespect at all to Leon, but no-one can make a badly typed or faint copy into a perfect reproduction. Under the editorship of Geof Smith, every article in Natgug can be clearly read, and I reckon that is well worth a little inconvenience to our contributors - so please, think again about contributing, AND DO IT NOW !

David Washford, 6 Houston Way, Frome, BA11 3EU 0373 72739 (before 8.30pm please) or weekdays on 0225 444000 (8.00am - 5.00pm)

Latest Update to TRSDOS 6.2

I have just received the update to TRSDOS 6.2, from LSI - they sent it just about by return - and (of course) it is called LS-DOS 6.3. It ought to be of considerable interest to the Group, and it really is extraordinary good value for $29.95 + carriage.

In some respects it takes over where 'BEEP' left off. There is the same BASIC enhancement package - fast (sector) loading and saving of programmes, six immediate keys (four arrows, comma, full stop), for BASIC lines, A,D,E,L as obvious single letter commands, and four more single letter commands: C,F,M,S.

C for COPY, copies a single line to a specific unused line No.
F for FIND, finds all references to a line, variable or keyword.
M for MOVE, moves a block of lines to a specfic new position, and renumbers them, updating all references.
S for SEARCH, searches and displays reference to a line variable or keyword.

Renumbering can now be done for blocks of lines, instead of the lot, by adding a fourth number. And very useful indeed, there is a new USR11. The syntax is dead simple, e.g.

```
L%=5:J(3)=&H700+L%:J(0)=15:USR11(VARPTR(J(0)))
'scroll- protects 5 lines. This makes use of SVC No.15: @VDCTL.
```

There is a fundamental change - 'user' passwords are no longer used, and the slot taken up by Time-stamping the File in the directory. Date goes on to 1999,and there is an ID command for the specific customer number (I wonder why?). DATECONV converts a pre-6.3 system disc(not for data discs), and DISKCOPY is a single pass format 'n backup. And there is TED a simple ASCII text-editor. I am writing this for fun on TED, not much fun actually*, there is no wrap- around. But it is simple, and very useful for editing JCL files ans suchlike. And there is BREF..... From DOS the syntax is BREF PROG/BAS(Line,P,W=132) or variations of the same. This will send to a print (width=132) all references to to all variables, all references to lines, and if there are any, references to the syntax errors in the BASIC programme. NEWDOS, eat your heart out !!

The documentation, for my money, is excellent. There is a short programme listed to give examples of USR11, which can toggle caps, show the DOS version, and show what, if anything, is in a particular drive, as well as scroll-protect.

This update really makes Model 4 programmes a whole new ball-game. I've cleaned up my variables, found leftovers from earlier versions, tidied up my GOSUBS, and its like taking a spoon to spaghetti instead of using chop-sticks blindfolded. It's nice that LSI are on our side, even if TANDY don't seem to care!

John ARTHUR. 2, Exmoor Street, London, W10 6BD
P.S. Actually I used LESCRIPT. TED isn't for printing.

A Readers Tale

I write the following reluctantly since I have no literary skills whatsoever and I have no particular skills with either hardware or software. I am however very concerned that NATGUG should not die so I feel that I must not ignore the plea for material from the Station Master Himself.

I joined NATGUG at Blandford in August 1984 when I bought a second hand Model 4 from Oz for £775. In the course of that one very hot day I succeeded in totally confusing myself and affected a complete change in the priorities of my life. At that time, I had no idea what a disk operating system was, my experience of computers was limited to Sinclairs and coincidently a Tandy colour computer. The fact that I moved from a colour machine to the Model 4 was in no way significant. My decision to buy the Model 4 has never at any stage given me any cause for regret. Even now, I see absolutely no reason to change the machine. I feel that the extra cost of software completely negates the speed advantage of the newer sixteen bit machines.

I now have a 4P as well, which is fitted with eighty track double sided drives. The original Model 4 now has 3 eighty track D/S drives plus one standard forty track Tandon from the 4P. These two machines epitomise luxury to me, since I have yet to make full advantage of the power and storage which I now have available. Beside the obvious advantage of portability, (I carry the 4P with me in my car wherever I go), two machines means that I can run two different programs simultaneously, - who needs multi-tasking operating systems ?

I "own" 1.43 Lescript which I like, and I have seen 1.66 and 1.68. The former is I think no advantage over 1.43, although I am sure someone will say I am wrong. 1.68 has the ability to be used with double duty which is very useful. 1.43 has the ability to produce a very nice selective directory by file extension, which the 1.6* do NOT have. There is a 1.5 Lescript which I have no knowledge of. The new version is 1.7 which according to the blurb has a new directory display plus the ability to make use of the new megabyte boards and presumably all the features of 1.68. (Anitek are in fact offering the supermem boards for sale.) Lescript files written under 1.68 are not readable with 1.43 unless written in ASCII.

The fitting of eighty track D/S drives to the 4P is reasonably easy. Fitting external drives is not so easy with the pre gate array machines and in any case it reduces portability. When the 4P is the main machine I can see the advantage in having external drives but when it is a second machine I can see no such advantage. It is a good idea to keep one standard 40 track drive for writing, but this is only practical in a machine with more than two drives. For reading purposes switchable 80's are fine in 40 mode. Most eighty track drives would seem to have a smaller power requirement than the standard Tandons, which are somewhat thirsty. John Kilpatrick was, I think, the first to notice his

machine ran much cooler and screen flicker completely disappeared when he fitted his new drives. I am afraid I am not sophisticated enough to notice these finer points.

Drive selection in both models is hard wired, I think that is the right technical term. The new drives will have an internal numbering (selection) switch so the ribbon cable should not have missing pins. To save the expense of new cable and connectors it is only necessary to turn over the ribbon cable so that the earth side which is whole, is used. This weeze can also be used on the desk-top model but here the 34 way end on the disk controller board has a keyway which must be removed for this mild bodge. It is obviously easier if the new switchable drives have face mounted switches, but it is usually possible to fit small toggle switches on the drive fascia. I wanted to use slide switches but this proved impossible. Fitting switches on the outer casing of the machine is a little more difficult in terms of longer wire and general positioning. Mechanically the main task is the drilling of new holes for the locating screws and just generally making sure everything fits neatly.

Fitting four drives inside the desk-top model is more difficult, and so far in my machine only drives 0 & 1 are operational. If switches cannot be fitted on the front face plate of the disk drive, then I think the best place is the main base plate about eight inches behind the on/off switch. Drive 0 & 1 are my old external drives; they have latch doors with no turn handles, they had to be fitted low to allow drive 1 door to rise up fully in the open position. The LED on drive 0 is very low in the aperture. The disc controller board has two edge connectors the top one for drive 0 & 1 the bottom one (external) for 2 & 3. Both pairs of drives must be internally numbered 0 & 1. The ribbon cable for 0 & 1 must therefore come from the internal edge connector over the top of the drive towers and down to the bottom drives. The original cable is probably not long enough and if it is the top connector will not be low enough for drive 1. The cable for drive 2 & 3 must come from the old external edge connector. The best route is probably up the back of the controller board and over the top of the tower. The fact that the ribbon cable has to exit the machine and then be plugged onto the lower edge connector means that unless the controller board is unscrewed the cable must be made up while it is threaded through the bottom plate. Power cables posed a small problem as the drives did not have the sockets all on the same sides. The power cable had to zig-zag down the tower which meant it was not long enough, so we not only had to graft in new plugs but also lengthen the cable.

I was advised by Oz that the use of a 4P Tandon together with three other drives would overtax the power source and cause overheating, due to the excessive demands of the Tandon, so I propose to insert a power switch on this drive. I shall also Zap the drive code table accordingly. I think that like any other task, one must examine the standard fitting, mark parts and note clearances before the initial dissembley. Fascia plates are not

all exactly the same size or thickness and screw locating holes definitely do not have standard locations. I had difficulty obtaining correctly threaded locating screws and I did come across one 40 track with a non-standard thread. I did not buy it so I did not pursue that anomaly.

Fitting Model 4 drives into a Model 3 is not totally straight forward. The Model 3 is not hardwired and the Model 3 drives have a numbering switch. Model 4 drives can be numbered for the Model 3 by breaking the appropriate tags adjacent to the edge connector. There are four tags numbered 1-4 not 0-3 as one would expect; 1 is right by the keyway of the edge connector. At present I am not sure how to renumber a half height Tandon.

Making 80 track booting disks was a little time consuming. I found that a few of my 80 track system disks would not boot although they had worked fine in the external drives under system (system=2), which I had auto'd on my 40 track booting disk. Certainly once one has made a successful eighty track booter it is advisable to keep one as a master to make new disks from. Converting from 40 tracks all the time is time consuming and it also takes time to make backups of a working disk and then purge the unwanted files. This may seem elementary but I got it wrong to start with and was forced to backup up a fullish disk and then spend many minutes purging. Even PURGE(q=n) takes some time to kill off 100 files. Under LDOS and TRSDOS 6.* I backed sys0 first then the other sys files although I understand that with 6.* this is not essential.

CP/M is I believe more tricky, and the use of CONFIG is critical. The new eighty track booting disk has to be config'ed correctly before one is able to boot it. I believe the sequence is boot on 40 (only choice). Run CONFIG and define any drive but drive 0 as an 80 D/S system drive. (Come to think of it would presumably be possible to do this all in drive 0, by configing A to 0 as 40 S/S and B to 0 as 80 D/S and keep changing disks and switches.) Format a new disk to the new format in the newly configed drive, then sysgen it, use SWEEP or PIP to transfer the transient commands particularly CONFIG.COM. Then log into the drive containing the new disc and rerun CONFIG. Designate Drive 0 as 80 D/S and save config to the new disk; not drive 0. Put the new disk in 0 and reboot. God knows how many times I fiddled with this before it worked. This is all from memory so I hope I have not left anything out.

Databases gave me a lot of trouble to start with. I could not get AIDS to work, undoubtedly my fault, but no way could I get the hang of it. I was told it was good, but each time I tried I soon gave up, I am not a good perseverer. I could not possibly spend hours and hours struggling with no success or like some stay up all night fighting the problem. I do the reverse, go to bed or have a bath and think about it. I do often find the penny drops under these circumstances.

I next looked at Profile which again seemed a possibility until I tried to use it. I objected to using Model 3 mode and soon realised that it could not handle a large database and it was not flexible. Then I discovered dBaseII, now that worked from the very start and within a few minutes I was building and then entering a test database. Success, and then I discovered it was flexible. You can change field sizes and add new fields in seconds and you can change field names in a few minutes. It does of course take a little time to fill the new field. For example I have a list of some 900 births of people born in England and Wales since 1837 with my surname. I suddenly needed to differentiate on sex. Copy the database to TEMP, MODI STRU add the extra one character field ON THE END, Append the data back from TEMP, GO TOP and BROW. The databases cannot tell sex from the christian name, but mostly we can. Half an hour of Typing M & F; job done. If the new field is not on the end you will have extra key strokes to change record. LIST for SEX="M" .and. date<893 .and. date>890, lists all male births between 1890 and 1893 inclusive; CONTROL P puts this out to printer, but do not turn printer off before doing another <C> P.

The order of fields can be changed at any time. The main complaint I would have about DBASE is speed. Indexing and sorting can take forever. I think the collossal new memdisks would alleviate this problem. FIND is very fast, although I feel not always under the two seconds claimed. FIND only works on a file indexed on The relevant field. Some functions are very slow on an indexed file, which is inconvenient when the FIND command is needed. It does seem to me to be curious that FIND will not work on the sorted field of a unindexed file, but that probably just shows my lack of experience.

All of this may be far to elementary to be of much interest to most, but I do hope it will encourage those who know better to put the record straight.

OPTICA - Name and address supplied.

FASTSORT and QUICKBASIC compiler

I have got the FASTSORT working at college in a financial data environment and will be moving onto the compiler next. Leon reckons the latter got a good review in BYTE and I am looking forward to using it. My playing time will be non-existent and the only time available will in compiling a series of modules that accept data, amend, read & write to disk, sort into account no. order, display/print a trial balance and display/print the profit & loss and balance sheet. Again, if anybody'wants some impressions on these two programs give me a ring.

Brian Pain.

Windows on the Model IV.

(I'm not too sure of the vintage of this correction to a previous article by Peter Knaggs. It resided on a disk that has been shunted around the country and only recently came to light, so apologies to both Peter and those who may have been waiting on this article. - Ed).

[illegible] to all those model 4 owners who typed in my windows program for the Model 4, as they will undoubtedly know, it did not work!. Unfortunately I was not able to test the code until the Swindon workshop, when it was pointed out to me that the code as published in the magazine would not work. My thanks to David Washford and Don Bannister for the loan of a Model 4 and software that allowed my to put the program to rights at about 2.30 Saturday morning. I was booked to talk on it at 10.30 on Saturday!

The problem was in the conversion from Model I over to the Model 4. The Model I does not alter the BC register when you display a character on the screen, [illegible], the Model 4 does. I had forgotten to save the BC counter registers whilst placing a character. The new code is explained below, please note the new code in the D!LOOP and DISP!BL this is the saving of the counter and its recovery. In the talk we modified the code to something more than before, so the demonstration programme in lines 50 to 69 will wait for a key. When a key has been pressed it will display it on the screen (in window 0) By pressing the F1 key you will select window 0, by pressing the F2 key you will select window 1, and the F3 key for window 2. You must press ENTER to exit back to the DOS. I feel that the defining of screen information was not good enough last time, so here it is again.

The screen or window information consists of 7 data values :
1. The top right line of window (number from 0 to 23)
2. column of window (number from 0 to 79)
3. The bottom left line of window (number from 0 to 23)
4. column of window (number from 0 to 79)
5-6 These are a two-byte current storage area (Line,Column)
NOTE: Here line & column number relates to actual screen location.
7. This contains the screen type;
   - 00 - Screen turned OFF
   - 01 - Screen in overwrite mode, when last character position is reached then start at top left and do not erase window
   - 02 - Screen in scroll mode. When last character position is reached then scroll the window up one line and start on the last line again.

I hope that this has helped to solve some of the problems and I am sorry about the mistakes. I've just completed a program that lets Model I LDOS act more like a Model 4 than it ever could before, and so my test capabilities should now be much more accurate !

Peter Knaggs, 12 Seymour road, Chippenham, Wilts, SN15 3HN (0249 654940)

```
1                ; WINDOWS/M4
2                ; Screen windowing Routines
3                ; By : Peter J. Knags
4                ; For the TRS-80 Model IV (4) computer
5                ;
6                ORG 0A000H     ; Some where to put it
7                LOAD $    ; Load it into memory there as well
8                ;
9                ; Equates (SVC Vector calls)
10               @FLAGS: EQU 101; Point IY to system flags
11               @EXIT: EQU 22  ; Exit back to TRSDOS ready
12               @VDCTL:EQU 15  ; Send video control byte
13               @DSP:  EQU 2   ; Display character at cursor
14               @KEY:  EQU 1   ; Wait for key press from *KI
15               @ERROR: EQU 26 ; Post Error message
16               @CLS:  EQU 106 ; Clears the screen (TRSDOS 6.2)
17                    ;
18                    ; Screen data
19                    ; """""""""""""""
20                    ; Data format :-
21               ; Start line,Start Column,End line,End column
22                    ; Current line,Current column,Screen type
23          ; Screen types => 0 Screen off, 1 Screen overwrite
24                              ; 2 Screen scroll
25                    ;
26 A000 00000514 SCREEN0: DB 00,00,05,20,00,00,01;Screen 0
27 A007 133C1750 SCREEN1: DB 19,60,23,80,19,60,02;Screen 1
28 A00E 0A140F3C SCREEN2: DB 10,20,15,60,10,20,01;Screen 2
29 A015 0F000F40 SCREEN3: DB 15,00,15,64,15,22,00;Screen 3
30 A01C 00000000 SCREEN4:DB 00,00,00,00,00,00,00;Screen 4
31                    ;
32 A023 3E16      DOS!EXIT: LD A,@EXIT
33 A025 EF        RST 28H       ; Return to TRSDOS
34                    ;
35 A026 4F        ERROR:     LD C,A    ; Put Error number
36 A027 CBB9      RES 7,C       ; Set Return to DOS flag
37 A029 CBF1      SET 6,C      ; Only disp Error message str
38 A02B 3E1A      LD A,@ERROR
39 A02D EF        RST  28H      ; Log in the errorT
40                    ;
41                    EXEC $          ; Set Execution address
42                    ;
43 A02E 3E6A      CLS:       LD A,@CLS     ; Trsdos 6.2 Only
44 A030 EF        RST 28H       ; Clear the screen
44                    ; Replace with for Trsdos 6.0, 6.1
44                    ; LD C,28
44                    ; LD A,@DSP
44                    ; RST 28H
44                    ; LD C,31
44                    ; LD A,@DSP
44                    ; RST 28H
45                    ;
46 A031 3E02      LD A,@DSP
47 A033 0E0F      LD C,15
```

```
48 A035 EF        RST 28H       ;Turn the Cursor ON
49                ;
50 A036 DD2100A0  LD IX,SCREEN0; Set initial screen (0)
51 A03A 3E01      EXEC:LD A,@KEY
52 A03C EF        RST 28H       ; Wait for a key
53 A03D FE0D      CP 13         ; Is it ENTER
54 A03F 28E2      JR Z,DOS!EXIT; Yes - Return to TRSDOS
55                ;
56 A041 FE81      CP 81H        ; Is it F1 key
57 A043 2004      JR NZ,EXE1    ; No - Skip to next test
58 A045 DD2100A0  LD IX,SCREEN0; Yes - Set to screen 0
59                ;
60 A049 FE82      EXE1:CP 82H   ; Is it F2 key
61 A04B 2004      JR NZ,EXE2    ; No - Skip to next test
62 A04D DD2107A0  LD IX,SCREEN1; Yes - Set to screen 1
63                ;
64 A051 FE83      EXE2:CP 83H   ; Is it F3 key ?
65 A053 2004      JR NZ,EXE3 ; No - Must be normal key
66 A055 DD210EA0  LD IX,SCREEN2 ;Yes - Set to screen 2
67                ;
68 A059 CD6FA0    EXE3: CALL DISP!CHR;Display the char typed
69 A05C 18DC      JR EXEC ; Go around until ENTER pressed
70                ;
71                ;
72                ; DISP!STRING
73  ; HL => String to be printed, Ending with X'00' or X'03'
74                ; IX => Screen Data information
75                ;
76 A05E DD7E06    DISP!STRING:LD A,(IX+6)  ; Get screen type
77 A061 B7        OR A          ; Is Screen on
78 A062 C8        RET Z          ; No - Return to caller
79 A063 7E        DISP!S: LD A,(HL)     ; Get character
80 A064 23        INC HL    ; Move pointer on
81 A065 B7        OR A     ; Is byte 00, NUL
82 A066 C8        RET Z     ; Yes - Return to caller
83 A067 FE03      CP 3   ; Is byte 03, ETX
84 A069 C8        RET Z ; Yes -Return to caller
85 A06A Cd6FA0    CALL DISP!CHR; No - Display the character
86 A06D 18F4      JR DISP!S     ; Loop back for next character
87                ;
88                ;
89                ;DISP!CHR
90                ; A  =  Character to be printed
91                ;IX=> Screen Data information
92                ; EXIT:
93                ;       AF', BC', DE', HL'  destroyed
94                ;
95 A06F D9        D3); Is it over Last column
112 A08C DAAEA0   JP C,DISP!EXIT; No - Exit back to caller
113 A08F DD7E01   LD A,(IX+1)  ; Yes - Get start column
114 A092 DD7705   LD (IX+5),A  ; Reset current column
115               ;
116 A095 7C       LD A,H         ; Get current line
117 A096 3C       INC A           ; Move it on
118 A097 DD7704   LD (IX+4),A  ; Reset it
```

```
119 A09A 3D       DEC A       ; Take it back
120 A09B DDBE02   CP (IX+2); Is it at last line
121 A09E DAAEA0   JP C,DISP!EXIT; No - Exit back to caller
122 A0A1 DD7E06   LD A,(IX+6)  ; Yes - Get screen type
123 A0A4 FE02     CP 2         ; Is it a scroll screen ?
124 A0A6 2809     JR Z,DISP!SCROLL; Yes - Scroll it then
125 A0A8 DD7E00   LD A,(IX+0)  ; No - Get start line
126 A0AB DD7704   LD (IX+4),A  ; Reset current line
127               ;
128 A0AE 08       DISP!EXIT:EX AF,AF;Get print character back
129 A0AF D9       EXX    ; Retrieve others
130 A0B0 C9       RET      ; Return back to caller
131               ;
132               ;
133               ;
134 A0B1 DD7E00   DISP!SCROLL:LD A,(IX+0)  ; Get start line
135 A0B4 67       LD H,A         ; Set cursor
136 A0B5 7C       DISP!LOOP:LD A,H      ; Get cursor line
137 A0B6 DDBE02   CP (IX+2)     ; Is it at last line ?
138 A0B9 3024     JR NC,DISP!BLANK; Yes - Blank out the line
139               ;  and return to caller
140 A0BB DD7E01   LD A,(IX+1)  ; No - Get start column
141 A0BE 6F       LD L,A         ; Set cursor
142 A0BF DD7E03   LD A,(IX+3)  ; Get End column
143 A0C2 95       SUB L      ; End col - Start col = len
144 A0C3 47       LD B,A  ;Set line length into counter
145               ;
146               ; Copy lines up in window
147 A0C4 24       D!LOOP:INC H     ; Move down to next line
148 A0C5 3E0F     LD A,@VDCTL
149 A0C7 C5       PUSH BC  ; Save counter <<<< ===== *****
150 A0C8 0601     LD B,1   ; Set @VDCTL to get char @ HL
151 A0CA EF       RST 28H        ;Do it
152 A0CB C226A0   JP NZ,ERROR  ; Go if error
153 A0CE 25       DEC H          ; Move back up a line
154 A0CF 0602     LD B,2   ;Set @VDCTL to put char. at HL
155 A0D1 4F       LD C,A         ; Tell it the character
156 A0D2 3E0F     LD A,@VDCTL
157 A0D4 EF       RST 28H        ; Do it
158 A0D5 C226A0   JP NZ,ERROR  ; Go if error
159 A0D8 2C       INC L        ; Move on to next column
160 A0D9 C1       POP BC
                  ; Retrieve counter <<<< ==== *****
161 A0DA 10E8     DJNZ D!LOOP ; Loop back for all of line
162               ;
163 A0DC 24       INC H        ; Move down to next lines
164 A0DD 18D6     JR DISP!LOOP ;Repeat until at last line
165               ;
166               ;
167               ; Blank out the last line
168 A0DF DD7E02   DISP!BLANK:LD   A,(IX+2)  ; Get End line
169 A0E2 67       LD H,A         ; Set cursor line
170 A0E3 DD7E01   LD A,(IX+1)  ; Get Start column
171 A0E6 6F       LD L,A         ; Set cursor column
172 A0E7 DD7E03   LD A,(IX+3)  ; Get End column
```

```
173 A0EA 95       SUB L    ; End column - Start column
                  ;  = Length
174 A0EB 47       LD B,A     ;Set counter to line length
175 A0EC C5       DISP!BL:PUSH BC;Save counter <<<<====*****
176 A0ED 012002   LD BC,0220H  ; Set @VDCTL to place
                  ;                character
                  ;               and set character to " "
177 A0F0 3E0F     LD A,@VDCTL
178 A0F2 EF       RST 28H          ; Place space at HL
179 A0F3 C226A0   JP NZ,ERROR      ; Go if error
180 A0F6 2C       INC L            ; Move on to next column
181 A0F7 C1       POP BC    ; Retrieve counter <<<< *****
182 A0F8 10F2     DJNZ DISP!BL    ; Repeat for all of line
183 A0FA DD7E01   LD A,(IX+1)  ; Get start column
184 A0FD DD7705   LD (IX+5),A  ; Set current column
185 A100 18AC     JR DISP!EXIT ; Exit back to caller
                 END
```

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Model 2/12	CBASIC	Complete
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Model 16	Xenix : Purchase Ledger	Complete
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