

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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CONTENTS

| | |
|--|----|
| Information on the group | 2 |
| Editorial | 4 |
| Letters | 6 |
| Notes from Anon | 7 |
| Printer Set-up | 11 |
| Read - Data construct for Turbo Pascal | 18 |
| Readers Adverts | 22 |

EDITORIAL

Time really seems to fly by when there is an editorial to get out each month. Swindon has come and gone and was greatly enjoyed by all those who attended. The system room was as usual crowded with machines, but as you might expect the balance is now swinging away from the old Model 1's to somewhat newer kit. Those of you who still use their old faithfuls might like to know that the 1986 Othello competition run in the US of A was won by a program written by Charlie Heath of Microsmiths running on - guess what ? Yes a venerable Model 1. It beat off competition from the likes of DEC, IBM and ATandT.

Back at Swindon, Model 4's were the most prevalent machines although we had a sprinkling of MSDOS clones, including a Tandy 3000, a Toshiba portable, a PCC IV/VIII (mine) and two Opus's (Opii ?). There was a fair amount of 'software evaluation' going on for these machines. The most unusual and interesting hardware was a hybrid experimental system comprising 8 Z80's configured for parallel processing, I/O being handled by a Model 1 and output going through Carl Rabe's highly modified colour system. The setup was being used to calculate and display Mandelbrot sets (.... I think).

As usual Os House had a consultation suite on the 8th floor, fixing errant machines and displaying some of the new wares from the Tandy stable including the Model 1000 EX and the new Model 3000 (an XT Clone driven by an 80286). He'd also managed to get hold of an Amstrad 1512 for demo purposes. I'm still not keen on the colour screen on these machines but they really are very good value for money. A friend of mine has actually managed to take delivery of one and persuaded the engineers at GEC where he works to unsolder the 8086 from the main PCB and replace with a chip carrier, into which he plugged a NEC V30 cpu. They then compared its performance with a Standard 8 Mz IBM PC/AT. Overall the speed of the Amstrad was only down by about 10%, compared to the AT. Amazing considering the price differential between the two systems.

Two of the most interesting software items that I saw at the meeting, were both to do with graphics software running on the Model 4 and both were being developed by group members. The first was a program to display and manipulate Dotwriter fonts as they would be printed, this is of course possible with Fontasy under MSDOS but not normally possible for the Model 4. Secondly Mike Collicutt (see Read - Data Construct in this issue) is developing a utility to interface Turbo Pascal to the Hi-Res graphic board of the Model-4 with the possibility of extending it to use existing graphic libraries. If the Model 4 / TRSDOS environment were still a force in the market place, then I think that both these programs would be commercial prospects. It's good to see that the group still has a great fund of talent.

Still talking of software, I often get asked which is the best wordprocessor for MSDOS machines. There's no easy answer,

its all horses for courses, and to my mind there is no easy to use, relatively powerful and above all cheap system. There are plenty of cheap editors, that are suitable for programmers and plenty of very powerful, word processing packages, that do everything including make your morning coffee but cost an arm and a leg. The middle ground is somewhat sparse. Two possibilities to consider are PC-WRITE and Volkswriter Deluxe. PC-WRITE is shareware (copy freely but if you use it a lot then register for \$75) and VW-deluxe is now available for £49.95 and represents very good value for money. Both word processors are rather heavy on use of ALT/CTL/SHIFT command sequences but offer a lot of facilities. Neither is a real WYSIWYG wordprocessor but for that sort of money you can't really expect anything else.

Again returning to Swindon, we were honoured(!) by the presence of Tandy themselves at the meeting, but talking to one of their sales executives they still seem ambivalent as to whether or not they should publically acknowledge the existence of the group. Brian tells me that we've had no new members has result of Tandy store referral, but we do now get pleas for help from Store staff when they don't know how to do something. I'm not sure that is the object of the groups existence.

However, Swindon was a great success and I'd like to publically thank Dave Washford and Bob Sparling for all the work they put into organising the Swindon meetings.

NB. In the two Pascal programs in this issue, the left and right curly brackets that mark comments will be printed as \$.†.

Readers Letters

Mrs K. Lynsky,
75 Alderton Heights,
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Leeds
Yorks LS17 5LT

Dear Ed.,

I have recently bought a TRS 80 Colour 2, 16K computer and am trying to find out where I can write to for a subscription to a computer magazine called "RAINBOW" which is I believe published in the USA. I would be grateful for any information that readers could let me have concerning this magazine,

yours sincerely

Mrs K. Lynsky

-0-0-0-

Mr. J.B. Roadley
27 Roundhill Rd.
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Tel. 0533-739914

Dear Ed.,

I wonder if any of the members know if there are any ROMS available for the Model 4 that are analogous to those available for the BBC machine, ie containing a wordprocessing program etc. If anyone should know of the existence of such devices I'd be grateful if they could let me know. Also I would like to obtain a copy of Versafire on 5.25 disk for either the Model III or 4. If anyone has a copy for sale, please contact me at the above address,

Yours sincerely

J.B. Roadley.

Notes from ANON

General Chat.

It must be almost a year since I last appeared in print. It has been a very busy time for me as, in September my successor started taking over, then in January the audit of my last accounts has started and this took about three weeks. After that there was preparation for my last Finance Committee meeting, which involved production of several papers. This done I left my lady successor to carry on on her own (she has resigned since) and set myself to writing a system for administration of about 2,000+ Welfare records. With system analysis and training the job took about two months. The coding spread to 6,325 lines of dBASE II code in eleven programs. The screen has 44 fields so I had to combine data into 32 fields available in dBASE II and there are eleven index files required for different jobs. After original snags and surprisingly few bugs the system was well in use before I left and the Welfare Officers found it very helpful. But I still have a manual to write - sometime in the future.

The final job was production of a data entry program for the Corps property. I still have to write programs for data manipulation but this will not be anything as big as the Welfare system.

At the end of June three generals and two colonels very kindly gave a lunch for myself and my wife in the Rag, I was presented with a couple of lovely water colours by the Committee and a walking stick by the staff and that was that. As I left, the RHQ were proud owners of model 4P ('little menace'), 2 models 4, 2 20MB NEC drives, two external 80 track DS drives, a DW II and 2 Epson printers - all that in addition to the mini installed in 1982. So, to finish my working life, I managed to install quite a few bits of TRS (or compatible) equipment.

In July I bought a house in West Tarbert, Harris, Outer Hebrides and on the 1st of September I took the boss, my computers and some of our possessions to the Western Isles.

My computer equipment now consists of Model 4, Model 4P with two 40/80 DS drives, HSC1686, 20MB NEC hard drive, dual external 80 track DS drive, WS300, Epson FX100 and a printer switch which permits switching between two computers and two printers. Very clever box - but it does strip 'LF' from the output. I had to reset switch 2.4 on the Epson to stop printing everything on one line. The only bit of equipment, which I want now, is a standby power supply unit. Apparently the winter winds tend to bring the power lines down and I would hate to have a hard drive crash.

It is astonishing how Parkinson's law works with everything. Two Tandy drives did not provide much storage so, some time ago, I bought twin Cumana 80 track DD DS drives. I thought myself really rich in hard storage as my Model 4 had some 1.75BM storage. Now my 20MB NEC, which is attached to Model 4P, is

almost full and I have less than 3MB left free. My NEC is divided into four logical drives (all under CPM) and to keep the directories managable I use different user areas. With the drive comes a program called CPMFIX.COM which permits a program residing in User area 0 to be run from any other User area and also flags the programs and data changed since last backup.

Also very useful is NEWSWEEP.COM as this permits copying programs between different User areas. One has to beware though of a couple of bugs. These are - on deletion the program/data is deleted in all User areas ie if one has say PROGRAM.COM in User area 3 and User 5 (the two being different programs but with the same name) NEWSWEEP will delete both of them although asked to delete one only say in area 5. Another bug occurs on copying. Should one wants to copy say WS.COM from User area 0 to User area 6 NEWSWEEP will change the flag and there will be only one WS.COM in User area 6. I discovered these two bugs when I was given a public domain program on CP/M 2.2 system disk containing all system programs. I copied this disk to a User area other then 0 and found that the system programs disappeared from area 0. I piped them back to area 0 and then, with NEWSWEEP, I tried to delete them from the other area and deleted them in both.

Supercalc 2.

Having got myself SuperCalc 2 (version 1.2) it is time that I should say something about it. My version runs under MSDOS 2.11 on my box which has 256K memory. After the system is loaded the remaining memory is 226K. The SC2 occupies 38K and so, the first nice surprise. Supercalc tells me after initialisation that I have 188K free. Multiplan under CP/M gives about 13K and VisiCalc on 128K Model 4 about 90K. One can really make a sizeable spreadsheet in 188K and, anyway, my box can accommodate 768K of RAM. No worry about running out of space.

SC2 announces itself and gives an option of entering into the spreadsheet or providing 'Help' information (Return or ?). The spreadsheet contains 254 rows and 63 columns (15902 cells if I can multiply). At the bottom of the screen are three lines : status, prompt and entry.

The status line shows the direction the cursor is pointing (<, > and similar arrows for up and down), the address of the current active cell, cell format, P if protected entry, and, if the cell is not empty, the cell contents preceded by type (Text, Rtxt (repeating text) and Form (Formula)). Inexperienced users do sometimes find on the right hand side of this line a message 'Formula ERROR'. Pressing any key apart from <enter> clears this message and one can proceed.

The second line in data entry mode shows the width of the active cell, remaining memory in Ks, last col/row (being the last cell of the rectangle containing data) and finally '?', which is a shout for help. This can be invoked at any time in command

mode. In command mode this line displays the current prompt - about which later.

The third line also has a dual purpose. In data entry mode it shows current cursor position and the data being entered. Data may be a string (begin with "), repeating string (begin with ') or formula. In this context 5/12 or SUM(A1:A8) are both formulas. In the command mode the following can be specified: = being Goto, ! for recalculation, ; switching the windows, & for eXecute Resume and / for selection of slash commands.

SuperCalc has two cursors - spreadsheet cursor and editing cursor. Only one cursor is active at the time - normally the spreadsheet cursor unless one is entering data or executing a command. The movements of the spreadsheet cursor are controlled either by the arrow keys or the usual WS diamond (←, →, ↑, ↓). The same keys control the editing cursor with the only change that down arrow or <CTRL>X delete the character under the cursor and up arrow or <CTRL>E open up a space (Insert). Pressing <ESC> whilst the editing cursor is active permits the use of spreadsheet cursor to select a range of cells whilst entering a command or a formula. Entering a character without inserting a space overtypes the character under the cursor. TAB moves the edit cursor to opposite end of the edit line and it works with data entry mode and edit mode. Backspacing to the beginning of the data entry line, or <CTRL>C, or <CTRL>Z return control from the editing cursor to the spreadsheet cursor.

Whilst on the the cursor control I ought to mention the '=', Go To command. This command places the cursor on the target cell if that cell is in the current window. If not, the target cell is placed in the top, left hand corner. The same thing happens to the current (active) cell if the Go To command is invoked without specifying the target cell. I find this placing of the target cell in the top left-hand corner one of the less endearing aspects of SuperCalc. I would prefer to have the selected cell in the middle of the window (if possible).

The spreadsheet unit is a cell. Each cell has content, value and format. Format of cells formatted individually is displayed on the global status line, but is not displayed for cells formatted within global, row or column range.

Cell content may be text, repeating text, formula or the cell may be empty. All cells are empty to begin, all strings are started with " and repeating strings with '. Anything else entered is a formula whether containing functions or just simple numbers. Text strings may be up to 115 and formulae up 116 characters long.

Cell value is one of the following - numeric, date, text, not available or error. Empty cells, text cells or repeating text cells have numeric value of 0. Formula cells can have numeric, date, textual, not available or error values.

Cell formats can be varied greatly - more than in VisiCalc or Multiplan. Columns can have even 0 width and cells can be hidden. Format does not alter the value of a cell - only the way the cell is visible (or not) or printed. Column width 0 and hidden cell are not the same. Width 0 column is not visible at all but one does require two movements of the cursor to go to it and pass it. Hidden cells are visible on the spreadsheet but the data contained within is hidden (not visible). If I last the course and time will permit I will cover the formatting when on /(/slash) commands.

Diverting from the manual - I have been playing with the customisation of CP/M version of SC2 with absent Install modules and a corrupted HLP module. I managed to borrow the installation modules of SC (not SC2) and managed to install SC2 with it. I also imported from my 16bit version of SC2 the HLP module and it works. Interesting - isn't it? SC2 (CP/M version gives 26K work space - against some 13K of Multiplan) and of course it is very fast whilst Multiplan can only be described as ponderous. However SC2 does not have the NAME option so one cannot go to a name. GOTO can also accept a reference to a row or column only (GOTO 8 puts the cursor in A8 whilst GOTO D puts the cursor in D1). SC2 cannot use the second 64K of Model 4 for data but it does fit there very nicely which speeds up the proceedings quite a lot.

Also I have managed (quite easily) to 'export' and 'import' the data files between the 16bit and 8bit versions. Here I have made some 'discoveries'. In my MSDOS file I have a spreadsheet which I use to analyse the football forecasts (yes - I am still at it using dBII and no - I still have not won anything). This file contains 600 cells - as when last used - and it occupies 11K in 16bit and 13K in 8bit versions. The sizes of the cells also differ. In 16bit one cell averages 18.77 bytes whilst in 8bit this climbs to 22.17 bytes.

There are also some differences in the performance by the two versions apart from the size of the spreadsheet available (26K in 8bit and 188K with 256K memory in 16bit version). CP/M SC2 loads much faster and, sometimes, responds faster to the help request but it recalculates much, much slower (This however can be improved by loading SC2 into top 64K on the 128K RAM models). Also there is a difference in /L and /S commands and changing the drive. CP/M version does accept the change to a disk other than the program disk but only to permit reading the directory. One has to enter the drive number if the spreadsheet to be loaded or saved is not located on the program disk. The MSDOS version specified program disk and data disk. Option C from the 'directory' permanently changes the data disk designation and this remains in force until changed again. More about SC2 in the future, near future I hope, but this will have to do for the first installment.

Anon.

Printer set-up

The following is a useful little utility which I have written to set up either an Amstrad DMP 2000 or Epson printer. The source code is written in Turbo Pascal. It should be easily convertible for use with other printers and Pascal compilers.

The only Turbo specific procedures used are:-

| | |
|-------------|--------------------------------|
| CLRSCR | clears screen |
| GOTOXY(x,y) | positions cursor on the screen |
| HIGHVIDEO | turns on reverse video |
| LOWVIDEO | restores normal video |

I have a compiled version running on both a Tandy Model 4 and an Amstrad CPC6128. If any 'Straddy' users want a copy, please send a 3" disc and a stamped addressed envelope for return postage and I will supply a compiled COM file for use under CP/M+. Those using Model 4 can have a compiled copy on a Montezuma 40 SS DD data or 80 DS DD data diskette if a blank disk is supplied with SAE. I am enclosing a compiled copy for the NATGUG library.

Using the Program.

On loading, the full menu of options will be displayed. The lefthand column gives options for setting up the various font combinations. Note that selecting any of these options A - M causes a reset of the printer (to avoid conflicts of illegal combinations). Options N - U are secondary settings and are not preceded by reset so if you wish to have Emphasised and set to skip the perforation plus line spacing of 8 lines per inch, then first select the font setting otherwise the aforementioned reset will undo the secondary settings.

When any option is selected the wording on the menu returns to normal video thereby indicating the choice. Choice A to Initialise the printer will clear this back to reverse video.

Choice V allows you to test the font if you wish. X will exit to CP/M.

The following is an example of the screen display:
Version 1.0 -- EPSON PRINTER SETUP -- SEPT 1986

| | | | |
|---|--------------------------|---|---------------------------|
| A | InitialisePrinter | N | SetHalfLineSpacing |
| B | NormalEmphasised | O | SetDoubleLineSpacing |
| C | NormalEmphasisedDouble | P | DisablePaper-outSignal |
| D | CondensedSingle | Q | SettoSkipoverPerforation |
| E | CondensedDouble | R | SetColumnWidthto136Char. |
| F | ProportionalEmphasised | S | SetColumnWidthto80Char. |
| G | EnlargedEmphasised | T | SetLineSpacingto8Lines/in |
| H | EnlargedDouble | U | SetLineSpacingto6Lines/in |
| I | EnlargedEmphasisedDouble | V | TestPrint |
| J | Elite | | |
| K | NearLetterQuality | | |
| L | ItalicNormal | | |
| M | ItalicEmphasised | X | EXITPROGRAM |

*** CHOOSE OPTION ***

The following is the Turbo Source code:

```
PROGRAM EPSON;
CONST
  CONDENSED =15;
  DOUBLE    =71;
  EMPHASISED=69;
  ENLARGED  =87;
  HALF      =51;
  INITIALISE=64;
  ESCAPE    =27;
  HALFLINE  =18;
  SKIPPERF  =78;
  ELITE     =77;
  SWITCH    = 1;
  NLQ       =120;
  ITALIC    =52;
  PAPEROUT  =56;
  TWOLINE   =72;
  WIDTH     =81;
  COL80     =80;
  COL136    =136;
  EIGHTLINES=48;
  SIXLINES  =50;
  PROPORTIONAL = 112;
  TESTPRINT
  ='ABCDEF GHIJ KLMNOPQRST UVWXYZabcdefghijklmnopqrstu vwxyz'
  SPACE    =' ';
```

TYPE


```
SELECTION = STRING[35];
```

```
VAR
```

```
CHOICE,Z :CHAR;  
IP,NE,NED,CS,CD,PE,EE,ED,EED,EL,LQ,ITN,ITE,SHLS : STRING[37];  
SDLS,DPOS,SSOP,SCW136,SCW80,SLS8,SLS6,TP : STRING[37];
```

```
PROCEDURE LOADVARIABLES;
```

```
BEGIN
```

```
IP      :='  A   Initialise Printer      ' ;  
NE      :='  B   Normal Emphasised      ' ;  
NED     :='  C   Normal Emphasised Double ' ;  
CS      :='  D   Condensed Single        ' ;  
CD      :='  E   Condensed Double        ' ;  
PE      :='  F   Proportional Emphasised ' ;  
EE      :='  G   Enlarged Emphasised     ' ;  
ED      :='  H   Enlarged Double         ' ;  
EED     :='  I   Enlarged Emphasised Double ' ;  
EL      :='  J   Elite                   ' ;  
LQ      :='  K   Near Letter Quality     ' ;  
ITN     :='  L   Italic Normal           ' ;  
ITE     :='  M   Italic Emphasised       ' ;  
SHLS    :='N   Set Half Line Spacing     ' ;  
SDLS    :='O   Set Double Line Spacing   ' ;  
DPOS    :='P   Disable Paper-out Signal  ' ;  
SSOP    :='Q   Set to Skip over Perforation ' ;  
SCW136  :='R   Set Column Width to 136 Char. ' ;  
SCW80   :='S   Set Column Width to 80 Char. ' ;  
SLS8    :='T   Set Line Spacing to 8 Lines/in ' ;  
SLS6    :='U   Set Line Spacing to 6 Lines/in ' ;  
TP      :='V   Test Print                ' ;
```

```
END; $loadvariables†
```

```
PROCEDURE BLANKLINE;
```

```
VAR
```

```
X :INTEGER;
```

```
BEGIN
```

```
FOR X:=1 TO 74 DO  
WRITE(' ');
```

```
END; $blankline†
```

```
PROCEDURE RESETPRINTER;
```

```
BEGIN
```

```
WRITE(LST,CHR(ESCAPE),CHR(INITIALISE));
```

```
END; $resetprinter†
```

```
PROCEDURE SETFONT(LEADIN,CODE,PARAM :INTEGER);
```

```
BEGIN
```

```
WRITE(LST,CHR(LEADIN),CHR(CODE),CHR(PARAM))
```

```
END; $setfont†
```

```
***.cp6
```

```
PROCEDURE INVERSE(LETTER :SELECTION;A,B : INTEGER);
```

```
BEGIN
```

```
GOTOXY(A,B);
```

```
WRITE(LETTER);  
END; $inverse↑
```

```
PROCEDURE DISPLAYMENU;
```

```
BEGIN
```

```
  GOTOXY(3,1);WRITELN('Version 1.0');  
  GOTOXY(30,1);WRITELN('-= EPSON PRINTER SETUP =-');  
  GOTOXY(70,1);WRITELN('SEPT 1986');  
  HIGHVIDEO;  
  GOTOXY(4,4);BLANKLINE;  
  GOTOXY(4,5);BLANKLINE;  
  GOTOXY(4,6); WRITELN(IP,SHLS);  
  GOTOXY(4,7); WRITELN(NE,SDLS);  
  GOTOXY(4,8); WRITELN(NED,DPOS);  
  GOTOXY(4,9); WRITELN(CS,SSOP);  
  GOTOXY(4,10); WRITELN(CD,SCW136);  
  GOTOXY(4,11); WRITELN(PE,SCW80);  
  GOTOXY(4,12); WRITELN(EE,SLS8);  
  GOTOXY(4,13); WRITELN(ED,SLS6);  
  GOTOXY(4,14); WRITELN(EED,TP);  
  GOTOXY(4,15); WRITELN(EL,SPACE);  
  GOTOXY(4,16); WRITELN(LQ,SPACE);  
  GOTOXY(4,17); WRITELN(ITN,SPACE);  
  GOTOXY(4,18); WRITELN(ITE,'X  EXIT PROGRAM  
' );  
  GOTOXY(4,19); BLANKLINE;  
  GOTOXY(4,20); BLANKLINE;  
  LOWVIDEO;  
  GOTOXY(31,22);WRITE('*** CHOOSE OPTION ***');  
END; $displaymenu↑
```

```
PROCEDURE INTERPRETCHOICE;
```

```
BEGIN
```

```
  CHOICE:=' ';  
  READ(KBD,CHOICE);  
  CHOICE:=UPCASE(CHOICE);  
  CASE CHOICE OF
```

```
    $ choice A-M sets up fonts after reset to clear printer↑
```

```
  'A' : BEGIN
```

```
    RESETPRINTER;  
    DISPLAYMENU;
```

```
  END;
```

```
  'B' : BEGIN
```

```
    RESETPRINTER;  
    SETFONT(ESCAPE,EMPHASISED,0);  
    INVERSE(NE,4,7);
```

```
  END;
```

```
  'C' : BEGIN
```

```
    RESETPRINTER;  
    SETFONT(ESCAPE,EMPHASISED,0);
```

```
        SETFONT(ESCAPE,DOUBLE,0);
        INVERSE(NED,4,8);
    END;
'D' : BEGIN
    RESETPRINTER;
    SETFONT(CONDENSED,0,0);
    INVERSE(CS,4,9);
    END;
'E' : BEGIN
    RESETPRINTER;
    SETFONT(CONDENSED,0,0);
    SETFONT(ESCAPE,DOUBLE,0);
    INVERSE(CD,4,10);
    END;
'F' : BEGIN
    RESETPRINTER;
    SETFONT(ESCAPE,PROPORTIONAL,SWITCH);
    SETFONT(ESCAPE,EMPHASISED,0);
    INVERSE(PE,4,11);
    END;
'G' : BEGIN
    RESETPRINTER;
    SETFONT(ESCAPE,ENLARGED,SWITCH);
    SETFONT(ESCAPE,EMPHASISED,0);
    INVERSE(EE,4,12);
    END;
'H' : BEGIN
    RESETPRINTER;
    SETFONT(ESCAPE,ENLARGED,SWITCH);
    SETFONT(ESCAPE,DOUBLE,0);
    INVERSE(ED,4,13);
    END;
'I' : BEGIN
    RESETPRINTER;
    SETFONT(ESCAPE,ENLARGED,SWITCH);
    SETFONT(ESCAPE,EMPHASISED,0);
    SETFONT(ESCAPE,DOUBLE,0);
    INVERSE(EED,4,14);
    END;
'J' : BEGIN
    RESETPRINTER;
    SETFONT(ESCAPE,ELITE,0);
    INVERSE(EL,4,15);
    END;
'K' : BEGIN
    RESETPRINTER;
    SETFONT(ESCAPE,NLQ,SWITCH);
    SETFONT(ESCAPE,EMPHASISED,0);
    INVERSE(LQ,4,16);
    END;

'L' : BEGIN
    RESETPRINTER;
    SETFONT(ESCAPE,ITALIC,0);
```

```
        INVERSE(ITN,4,17);
    END;
'M' : BEGIN
    RESETPRINTER;
    SETFONT(ESCAPE,ITALIC,0);
    SETFONT(ESCAPE,EMPHASISED,0);
    INVERSE(ITE,4,18);
    END;

$ choices N-V are secondary settings without reset†

'N' : BEGIN
    SETFONT(ESCAPE,HALF,HALFLINE);
    INVERSE(SHLS,41,6);
    END;
'O' : BEGIN
    SETFONT(ESCAPE,HALF,TWOLINE);
    INVERSE(SDLS,41,7);
    END;
'P' : BEGIN
    SETFONT(ESCAPE,PAPEROUT,0);
    INVERSE(DPOS,41,8);
    END;
'Q' : BEGIN
    SETFONT(ESCAPE,SKIPPERF,11);
    INVERSE(SSOP,41,9);
    END;
'R' : BEGIN
    SETFONT(ESCAPE,WIDTH,COL136);
    INVERSE(SCW136,41,10);
    END;
'S' : BEGIN
    SETFONT(ESCAPE,WIDTH,COL80);
    INVERSE(SCW80,41,11);
    END;
'T' : BEGIN
    SETFONT(ESCAPE,EIGHTLINES,0);
    INVERSE(SLS8,41,12);
    END;
'U' : BEGIN
    SETFONT(ESCAPE,SIXLINES,0);
    INVERSE(SLS6,41,13);
    END;
'V' : WRITELN(LST,TESTPRINT);
    END;
END;

$      main program†
BEGIN
    CLRSCR;
    LOADVARIABLES;
    DISPLAYMENU;
    CHOICE:= ' ';
    WHILE NOT (CHOICE = 'X') DO
```

```
BEGIN
  INTERPRETCHOICE;
END;
CLRSCR;
END.
```

No doubt others in the group may be able to improve on the above source code. Indeed, I would welcome suggestions and improvements as I might well learn from them.

Note: Those with Grafrax chips should check the codes set out in the CONST declaration and alter as required.

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READ - DATA Construct for TURBO Pascal

For those of you who have attempted to initialise a mammoth data array in Pascal using `Ary[1] :=, Ary[2] :=, ...Ary[32767] :=,` only to find that your fingers wear out or the TURBO Editor wings about a full source code buffer before you succeed, here is a simple method which emulates BASIC's READ - DATA construct. Although the method can be used for types BYTE, INTEGER and REAL, it's most useful for BYTE data.

The trick is to place your data in a dummy INLINE procedure. Once you've got it there, you can load it into an array, write it to the screen, or do pretty well whatever you want with it.

The following example uses two interesting TURBO facilities: the ADDR function and the predefined array MEM. The ADDR function returns the absolute address of the first byte of the variable, procedure or function identified by its argument. The predefined array MEM enables you to access any byte in the memory map: for instance, `Start := MEM[$100]` loads the byte at 100 hex into the variable Start.

PROGRAM Example;

VAR

Address_Pointer : INTEGER;

\$ Dummy Procedure to hold data bytes:

Don't call this one unless you are an intrepid adventurer! †

PROCEDURE Buffer;

BEGIN INLINE

(1/1/2/3/5/8/13/21/34/55/89/144)

END \$ Buffer †;

BEGIN \$ Example †

Address_Pointer := ADDR(Buffer);

\$ Address_Pointer now contains

the address of the first byte of Buffer †

CLRSCL;

Writeln('Fibonacci Sequence:',@J);

\$ The WHILE loop checks for the occurrence of the RET (END)

instruction at the end of procedure Buffer †

WHILE MEM[Address_Pointer] <> \$C9 DO BEGIN

WRITE(MEM[Address_Pointer]:4);

Address_Pointer := SUCC(Address_Pointer)

\$ Address_Pointer now contains address of next byte of Buffer †

END \$ WHILE †

END \$ Example †.

Notice the use of the `END $ Buffer †` statement to mark the end of the data block. Of course, if your data is peppered with C9's, you will have to use some other byte at the end of the block and test for that.

Although the method works well for data type BYTE, its use for INTEGER or REAL data is not recommended because tortuous conversions must take place due to TURBO's method of storing these types. A better method for initialising large Integer or Real arrays would be to write a small program to read the data from the console into the array and write this to a file for later reading into the main program.

Finally, here is a program which uses data stored in a dummy procedure to play a small tune. The playing algorithm is Leo Christopherson's famous "Celeste" routine which I have coded as an INLINE Pascal procedure. Those people who do not use a Model 4/4P, whose squeaker is addressed by port 255, will have to alter the OUT instruction to send the squeak where it must.

PROGRAM Tune;

\$ Buffer is of type INTEGER and is the address of the Tune Data †
 \$ Buffer. Tune Data consists of pairs of bytes corresponding to †
 \$ Duration, Pitch †

\$ Duration (Byte 1 of pair) is any Byte value: e.g.4, 8, 16, 32 †

| | | | | | | | |
|----|------------------------------|-----|----|-----|------|-----|---|
| \$ | Pitch Chart (Byte 2 of pair) | | | | † | | |
| \$ | | | | | † | | |
| \$ | F | 251 | D# | 141 | C# | 79 | † |
| \$ | F# | 238 | E | 133 | D | 74 | † |
| \$ | G | 225 | F | 125 | D# | 70 | † |
| \$ | G# | 211 | F# | 118 | E | 66 | † |
| \$ | A | 199 | G | 111 | F | 62 | † |
| \$ | A# | 188 | G# | 105 | F# | 59 | † |
| \$ | B | 177 | A | 99 | G | 55 | † |
| \$ | C | 168 | A# | 93 | G# | 52 | † |
| \$ | C# | 158 | B | 88 | A | 49 | † |
| \$ | D | 149 | C | 83 | REST | 120 | † |

VAR

Buffer : INTEGER;

PROCEDURE Notes; \$ Dummy Procedure containing Sample Tune Data †

BEGIN INLINE(
 12/177/ 12/141/ 12/133/ 11/105/ 1/120/ 12/125/ 12/118/ 12/105/
 11/88/ 1/120/ 12/118/ 12/141/ 6/133/ 6/141/ 12/158/ 23/141/
 1/120/ 23/238/ 1/120/ 12/177/ 12/141/ 12/133/ 11/105/ 1/120/
 12/125/ 12/118/ 12/79/ 11/99/ 1/120/ 12/105/ 12/88/ 6/99/ 6/105/
 12/118/ 23/133/ 1/120/ 12/141/ 11/149/ 1/120/ 12/168/ 18/133/
 6/120/ 18/125/ 6/120/ 12/118/ 12/99/ 11/83/ 1/120/ 12/111/
 12/133/ 6/125/ 6/133/ 18/149/ 6/120/ 18/133/ 6/120/ 11/225/
 1/120/ 12/168/ 12/133/ 12/125/ 11/99/ 1/120/ 12/118/ 11/111/
 1/120/ 1/88/ 1/83/ 1/79/ 9/74/ 11/93/ 1/120/ 35/83/ 1/120/ 12/93/
 24/99/ 23/111/ 1/120/ 32/177/ 16/141/ 16/133/ 16/118/ 16/141/
 24/105/ 7/118/ 1/120/ 16/118/ 16/141/ 24/105/ 7/118/ 1/120/

40/118/ 8/133/ 8/141/ 8/158/ 31/177/ 1/120/ 16/141/ 16/133/
16/118/ 16/141/ 16/105/ 16/93/ 20/88/ 24/79/ 2/70/ 2/125/ 2/70/
2/125/ 2/70/ 2/125/ 2/70/ 2/125/ 2/70/ 2/125/ 2/70/
2/125/ 2/70/ 2/125/ 2/70/ 2/125/ 2/70/ 2/125/ 2/70/
1/125/ 1/120/ 9/79/ 1/120/ 2/79/ 2/118/ 2/79/ 2/118/
2/79/ 2/118/ 2/79/ 2/118/ 2/79/ 2/118/ 2/79/ 2/118/
2/79/ 2/118/ 2/79/ 2/118/ 2/79/ 2/118/ 2/79/ 2/118/
2/79/ 2/118/ 2/79/ 2/118/ 2/79/ 2/118/ 2/79/ 2/118/
2/79/ 2/118/ 2/79/ 2/118/ 2/79/ 2/118/ 2/79/ 2/118/
END \$ Notes †:

| | | | | | |
|------------------------|----|-----|-----------|----------------------|---|
| \$20/\$D8/ | \$ | JR | NZ,COUNT1 | ; Go if not zero | † |
| \$3D/ | \$ | DEC | A | ; Decr Duration | † |
| \$20/\$D3/ | \$ | JR | NZ,COUNT2 | ; Go if not zero | † |
| \$23/ | \$ | INC | HL | ; Get next note data | † |
| \$18/\$C3) | \$ | JR | START | ; Loop back | † |
| END \$ Play †;\$ EXIT: | | RET | | ; Exit | † |

BEGIN \$ Tune †
 Buffer := ADDR(Notes);
 Play(Buffer)
END.

Apologies to Prokofiev.

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