

SYDTRUG NEWS

SYDNEY TRS-80 USERS GROUP NEWSLETTER

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IN THIS ISSUE

We continue last months theme on modem communications with an article by Ben Barat (I got the spelling right this time Ben.) on the implementation of a Call Back Bulletin Board System and other related topics. We also have a program written by Michael Cooper for use with the UDM-1200 modem to interrogate the RS-232 status, and control the modem through the RS-232 Control line.

Off the subject of modems there are a couple of short articles submitted by Michael Harris, the first is the forerunner to a series of articles on languages available on the TRS-80, the second is a short piece to add a feature to MMS Forth.

Ted Romer (hope I've got the spelling right Ted.) has written a reveiw on a program available from Wittsoft. The program allows you to create backups of your Super Utility Master diskette, so that all of you who dont relish the thought of using the master (or the single backup supplied) due to the distance problems between here and the "States", need have no further worries.

Due to job commitments I will be doing some travelling around during the next six months or so, this will mean that I wont be able to put as much time into this Newsletter as I have over the last few months. Although I will endeavor to write some articles on the TRS-80 scene in Melbourne and Perth if I possibly can. While away I hope to have someone to handle the production of the Newsletter so that you still should receive it the week before the first meeting of the month.

I have also included in this issue, step by step instructions on performing a 48k in keyboard RAM modification, as there has been a lack of articles on the hardware aspects of our hobby in the Newsletter over the last couple of issues. As an afterthought I have included a short article on an undocumented feature of the NEWDOS/80 utility SUPERZAP. I dont know whether this feature is well known or how useful you may find it, but here it is for your information.

Your Editor
Gary Bryce.

MEETING DATES

To reduce the number of Telephone calls being received by Mick Rowney requesting the dates of upcoming meetings, here are the dates for the months of November and December.

November	December
12th - Monthly General Meeting	10th
19th - Special Interest Meeting	17th
26th - Beginners and Games day	-----

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SUPDUP REVEIW
from Ted Romer

If you have ever wanted to backup your copy of Super Utility from it's unreadable disk to make a /CMD file of it then the program you need is SUPDUP. It is designed for versions 2.2p, 2.2z and 3.1a of Super Utility, for either Model I or Model III, although it is supplied on a 35 track Model I formatted diskette and requires conversion for use on the Model III.

To convert Super Utility to a /CMD file one must first boot up Super Utility. The SU disk is then removed and all disk drive doors left open. Configure SU to suit your particular system. SUPDUP instructions then ask you to note which version of SU you possess. Then press (ENTER) from the main menu three times. The ZAP menu is selected then the "Display Sectors" function and finally the mod of drive zero sector zero. The error prompt is answered with the (S) skip key.

By pressing the Shift and Break keys you are placed at the main menu again, select the "Memory Utilities" function and then the "Move Memory" subroutine. The Start and End prompts are answered with the appropriate addresses given with SUPDUP dependant on your version of Super Utility, the number of bytes moved is then displayed. Obviously room is being created for a DOS.

A System disk is then inserted and booted up using the reset button. SUPDUP is then called up and executed, beginning by asking for the Start and End addresses, this question is answered with the same addresses used previously. The next operations are the entry of "Data" and "Patches" given with SUPDUP. The filename for the /CMD file is then requested.

When the previous operation is complete you have the choice of generating more backups. Finally the choice of remaking SU or any /CMD file as a bootable disk is given. It involves formatting a blank diskette in TRSDOS Model I format, selecting file utilities of SU, "Copy files option" to copy the command file to disk. From the "Repair Utilities" select "Repair Boot sector" and SU will write a boot loader to the diskette. (Only available with "2.2p or z versions)

NEWDOS SUPERZAP
from Gary Bryce.

While scrolling through the SUPERZAP utility supplied with NEWDOS/80 version 2.0 some time ago, I found the command table area. Looking at the ASCII display on the right of the display all the commands, DD, DM, DFS, DTS etc, were displayed. At the end of this table I noticed what appeared to be another in the same format as those previous commands, although not completely sure I suspected this RRT command to mean Read Relative Track, so returning to the main menu, I typed RRT (ENTER) and was greeted with the following display :-

DRIVE AND RELATIVE-SECTOR-WITHIN-DRIVE #'S?

After entering the drive number and the starting sector of the track to be read, SUPERZAP proceeded to read the track into memory and displayed the start and end addresses of the track buffer, returning to the main menu and selecting the DM (display memory) option the complete track was in memory with all track and sector ident marks.

This feature is as far as I know, not listed anywhere within the documentation for the DOS, there does not appear to be a corresponding facility to allow the track to be re-written to disk, but someone may care to do a bit of coding to add such an option.

Please note, that a possible reason for the fact that this facility is not documented may be because it only appears to work satisfactorily on diskettes formatted in single density.

MODEM TIDBITS

from Ben Barat.

The comments of the Editor in the last few newsletters, (not to mention the misspelling of my name) has goaded me into writing a few lines. These are only ideas that you will have to think about before implementing.

If you have read recent articles in various magazines, you may have noticed that some bulletin board systems are isolated from the average caller. To activate the CBBS (Computer Bulletin Board System) you ring the phone number, hang up after the first ring, and re-dial. The second time the computer answers. If you want to talk to the "Resident Human", you let the phone keep ringing the first time. This is called a CB system (Call Back). This is the type of CBBS setup anybody that shares a phone with someone other than a computer needs.

I wondered how you would implement such a feature. If you do it in software, anytime somebody rings up the CBBS the phone will ring once only at random times (knowing computer nuts, this is usually at 2 am), which is guaranteed to drive anyone insane. Sure, the software could poll the RI (Ring Indicator) line on the RS 232 interface, but that involves mucking around with the resident DOS. How about a quickie hardware mod first?

The humble NE 555 timer sprang to mind. What you want the phone to do is ring on the second or third ring coming down the line. Mask off the first few rings and all is well. A humanoid wishing to communicate to same just has to wait a few more rings before the phone is answered. If we cut the RI line between the modem and the computer and insert an intelligent delay line, the problem is solved. A NE 555 timer hooked up as a monostable could do the trick.

To calculate the time constants required, you have to know how often the phone rings. Dial 199 or 2200 (it depends on your local exchange) and hang up. Your phone will start to ring. (Too bad... there isn't anyone there and it cost you 20c). Count the length of time it takes to ring ten times, and average out how long between rings. Aim for two rings when calculating the NE 555 time constants. (Editors Note:- The specified timing for ring periodicity in the Australian Telephone system is 400ms on, 200ms off, 400ms on, and 2 seconds off repeated.)

In practice, the first ring coming down the line will trigger the NE 555, which would trigger another NE 555 monostable (Hey what, more than one? Don't worry, they only cost about \$1.00 each.) for about 30 seconds. (This will depend on how long you give the caller time to ring back to access the CBBS.) The first NE 555 times out after two rings and connects the phone to the line via the phone/modem relay. If the caller has hung up before the first NE 555 times out, the next time the RI line goes true (the line rings), the second NE 555 will still be triggered and will pass the RI signal to the computer. Viola, communications! If the Modem can't answer for some reason, the second NE 555 will time out and the phone will ring, alerting the operator that something is wrong.

Now comes the bits YOU have to figure out. The NE 555's will have to drive a small relay or something to pass the RI signals. The gadget will have to be put in a small box with connectors between the computer, modem and phone/data switch. As the gadget is NOT hooked up between the line and the modem, fear not the threats of Telecom, and experiment to your hearts' content.

If you are a confirmed software hacker that cringes at the mention of the words SOLDERING IRON take heart. Hidden in your computer are various output lines that may not be used by your CBBS setup. Take the RTS (Request To Send) or DTR (Data Terminal Ready) lines on the RS 232 interface - most modems only require one of these lines to operate. If you are not using your printer when in CBBS mode, the printer output lines are also free, the cassette port is also free. You can use them to trigger a NE 555 timer (just a simple circuit) which is hooked up to the computers' reboot line. Modify your DOS to intercept the clock interrupt and send an output to the particular line you have chosen for this job. The line resets the NE 555 timer so that it doesn't reboot the computer. If some smart alec gets inside your CBBS, and uses the "Trojan Horse" method to try and pinch your protected software (i.e. the latest mods to your CBBS program), I bet he will have to muck up some of your DOS. If this happens, no more "special OK" signals will reach the NE 555 timer, and it will time

out and reboot the computer. Depending on the time lag you calculate for the NE 555, he may only have a few seconds to do anything nasty before being cut off.

Some of you heretics have acquired TRAPPLES. Other than the obvious suggestion of what to do with them, can I suggest that they could make a useful peripheral for your CBBS. You have all heard about the CBBS systems in the States that have closed down because some idiots have abused them. Put your TRAPPLE in series between your modem and TRS-80, and use it as a "swearword filter"! You can program the likely swearwords that would be transmitted in the TRAPPLE, and it would recognise them and cut the offender of the line. (Or you could get the TRAPPLE to transmit the sum total of these words in its memory when triggered by one of them - nasty!). You could get it to check things like passwords, and be a memory buffer also, of course, if you are one of the Tandy faithful, and have a spare MOD I or have graduated to a MOD III/IV, you could always use to old MOD I for this purpose rather than retiring it altogether.

To finish off, let me say that I don't wish to be quizzed by individuals in a corner at the club meeting in relation to these ramblings. If you have a question, write it down and the reply can be published in the newsletter for all to read. Not only will it save me having to repeat myself, but it should also help generate more ideas and discussion from others. The hobby of inter-computer communications is still in its infancy, and the imagination is the only limit to its potential.

LANGUAGES

from Michael Harris.

Hi, this is the introduction to a series of articles on the different languages which are available on the TRS-80. The languages which I intend to cover are BASIC, FORTRAN, COBOL, FORTH, C, PASCAL and Z80 assembler. In this introduction, I will cover the guidelines of the series.

The articles will take the form of a program to calculate the set of Prime numbers between 1 and 100 and print them to the Video display. I will explain the source line by line. Error trapping and the size of the final working program will be included. To complete this article I'll explain some computer jargon :-

6502	-	The year that you will finally pay off your computer.
6800	-	The year that you will finally pay off your peripherals.
68000	-	The year that your wife will forgive you for buying a computer.
ALGOL	-	Husband of Polygol. Their missing daughter is named Polygon.
AFL	-	An APPLE computer after it has been dropped from a roof.
ASCII	-	Usually used in pairs, it's ideal for travelling down snowy mountain sides.
ATARI	-	Famous John Wayne movie involving Elephants.

FORTH MODIFICATIONS

from Michael Harris.

These are a couple of mods to MMS FORTH version 2.0. First off, are you sick of having to leave EDIT to FLUSH one Block. To add FLUSH all you do is edit the second NCASE statement of the last block of the screen editor to add onto the right end of the first line, the number 86 and place the word FLUSH in the same place two lines down, go to Block 15 and CUSTOMIZE the new screen editor. Now to FLUSH the last block you type Alternate-U to update and Alternate-F to FLUSH the bloc. To finish off, the following is a little program for when you type a command word while in lowercase mode

```
! dir 0 CURSOR 6 + C! DIR ;
```

When you type 'dir' the program automatically changes the mode back to uppercase.

UDM1200T/BAS

by Michael Cooper.

```

1  '      UDM1200T/BAS Version 1.1.0      29/09/83
2  '      Copyright Michael Cooper.
3  '      UDM1200T is a TRS-80 Disk Basic sub-system to a Remote TRS-80 System
4  '      and is used to interrogate the RS-232 Status, and to control the Modem
5  '      through the RS-232 Control line <DTR>.
6  CMD"B","OFF"      ' Disable BREAK ( LDOS Command )
20 RESTORE; OUT &HFE,1 ; CLEAR 1500 ; DEFINT A-Z
30 INC=1 ; TRUE=-1 ; FALSE=0 ; XX=FALSE ; WN=0 ; J=0
40 DEFFN RI(ST)=INP(ST) AND &H10
45 DEFFN CD(ST)=INP(ST) AND &H20
50 DEFFN CTS(ST)=INP(ST) AND &H80
55 DEFFN DTR(CP)=INP(CP) AND &H01
70 ST=&HE8      ' Model I/III, RS-232 Status Port.
80 CP=&HEA      ' Model I/III, RS-232 Control Port.
304 '
305 ' ***** FUNCTIONS *****
312 DEFFN TB%(A1$,A2%)=(ASC(MID$(A1$,INT(A2%/8)+1)) AND 2*(A2%-INT(A2%/8)*8))<0
314 DEFFN SB$(A1$,A2%)=LEFT$(A1$,INT(A2%/8))+CHR$(ASC(MID$(A1$,INT(A2%/8)+1,1)) OR
      2*(A2%-INT(A2%/8)*8))+MID$(A1$,INT(A2%/8)+2)
316 DEFFN RB$(A1$,A2%)=LEFT$(A1$,INT(A2%/8))+CHR$(ASC(MID$(A1$,INT(A2%/8)+1,1)) AND
      NOT 2*(A2%-INT(A2%/8)*8))+MID$(A1$,INT(A2%/8)+2)
398 '
399 '      This code will allow you to test the RS-232-C lines and display status
      on your screen. Delete it in the actual program.....
400 CLS
405 PRINT @ 66,"DTR"; PRINT @ 76,"CD"; PRINT @ 86,"RI"; PRINT @ 95,"CTS";
410 PRINT @ 129,USING"####"; FN DTR(CP); PRINT @ 139,USING"####"; FN CD(ST);
      PRINT @ 149,USING"####"; FN RI(ST); PRINT @ 159,USING"####"; FN CTS(ST);
415 SAV$=INKEY$ ; IF SAV$="" GOTO 410 ELSE GOTO 420
420 PRINT @ 256,"CHOICES"
425 PRINT"      1.      Switch DTR ON"
430 PRINT"      2.      Switch DTR OFF"
435 INPUT WN ; IF WN>2 GOTO 435
436 IF WN=1 THEN OUT CP,(INP(CP) AND &HFC) ; GOTO 400
437 IF WN=2 THEN OUT CP,(INP(CP) OR 1) ; GOTO 400
438 GOTO 400
451 '      Lines 455-464 are only needed if you have the Mark I model of the UDM-1200
      Modem. Leave them "REM'd" if you have the auto answer Mark II.
452 '
454 'OUT CP,(INP(CP) AND &HFC)      'Set UDM-1200 MK2 to READY.
455 'OUT CP,(INP(CP) OR 3)      'Reset UDM-1200 MK1
457 'IF FN RI(ST)=16 GOTO 457      'Wait for RING
460 'FOR LO=1 TO 1000 : NEXT LO      'Delay 2 Seconds
462 'IF FN RI(ST)=16 GOTO 457      'Check RING again
463 'FOR LO=1 TO 1000 : NEXT LO      'Delay 2 Seconds
464 'OUT CP,(INP(CP) AND &HFC)      'Answer Phone UDM-1200
465 'IF FN CTS(ST)=128 GOTO 465      'Wait for Modem READY
466 'FOR LO=1 TO 10000      'Allow 15 Seconds for
467 '      IF FN CD(ST)=0 GOTO 480      ' Test for CARRIER
469 'NEXT LO
470 'OUT CT,(INP(CP) OR 3)      'Else Hang up
472 'FOR LO=1 TO 1000 : NEXT LO      'Delay 2 Seconds
474 'GOTO 455
480 '      Start LOGON
485 STOP

```

48K IN KEYBOARD

by Gary Bryce.

Although this modification is available from a number of sources, I decided to write this article for those of you, who for whatever reason, would like to do the mod yourself (It's cheaper). The mod detailed here, relates to the extension of a 16K "G" board version of the TRS-80, details for other versions and the System 80 will appear in subsequent articles if there is sufficient demand.

If you don't know how to use a soldering iron or are not experienced in the handling of MOS devices, have it done buy someone who has!

Items Required

1 x 74LS139

- Decoder chip

16 x 4116

- Dynamic Rams (additional to those already in place.)

Soldering Iron, Solder, fine connecting wire, Diagonal cutters, Long Nose pliers and an Xacto or similar knife.

Instructions

1. Remove all cables from the keyboard and turn it upside down on a piece of cloth.
2. Remove the screws from the base of the unit taking note of the three differing lengths for reassembly.
3. While holding the case together, turn it over and remove the top.
4. Carefully fold back the keyboard unit, taking care with the ribbon cable that connects to the main PC board and remove the rubber spacers.
5. Turn the whole assembly over again and remove the bottom of the case, boards should now be resting component side up with the keyboard unit to the rear.
6. Prepare the unused Inverter in Z52 by cutting pins 8 and 9 of this IC as near as possible to the PC board, then carefully bend these pins up at 90 degrees to the board.
7. Prepare the address decoder IC (a 74LS139) by cutting all, except pins 8, 9, 10, 13, 14, 15 and 16. Of these bend pins 9, 10, 13, 14 and 15 at 90 degrees. (see fig. 1)
8. Mount the address decoder on top of Z21, being careful to ensure that it is oriented in the same manner as Z21 (ie, pin 1 to pin 1), and solder pins 1 and 16 of Z21a (74LS139) to Z21.
9. Make note of the position of Z74 and then carefully turn over the PC boards, cut the track between pins 12 and 13 of Z74 and return the PC boards to their original position.
10. Prepare the RAM chips by bending out pin 15 of the sixteen new chips.
11. Remove the eight existing 4116 RAM chips from sockets Z13 to Z20 and store in a piece of foil covered foam.
12. Build eight stacks of three RAM chips, consisting of one of the existing RAMs with two of the additional RAMs mounted on top. (see Figure .2)
13. Carefully solder all pins together except pin 15 of each IC, taking care not to overheat the IC. (solder pins at alternate ends and sides of the IC.)
14. Prepare two lengths of fine wire, each approximately 260mm long and strip the insulation as shown in Figure .3.

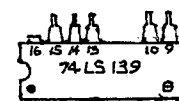


FIGURE - 1.

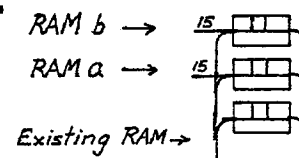


FIGURE - 2.

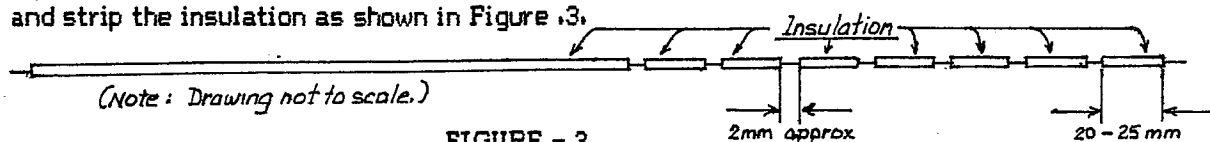


FIGURE - 3.

15. Insert the RAM stacks into sockets Z13 to Z20.
16. Solder each of the wires prepared in step 14 to pin 15 of each row of the new RAMs.
17. Solder the free end of one wire to pin 9 of Z21a (74LS139) and the other wire to pin 10.

19. After checking all connections, reassemble the unit taking care to replace the rubber spacers and screws in their original positions.

21. If everything appears OK, press ENTER, after a slight delay te normal "RADIO SHACK" and "READY" messages should appear. Type ?MEM and press ENTER and the value 48340 or similar should be displayed.

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LSI Offer

As a member of the club I wish to extend a special offer to SYDTRUG members for any software sold by LOGICAL SYSTEMS Incorporated.

I will give any member a 20% discount on the retail US\$ price of any purchase. This discount will apply on the following conditions. All freight, customs duty etc, are at the members cost and all orders are prepaid.

A calculation table which allows for all components to be totalled appears below. Please note that I will use the current US rate of exchange, so allow for this in orders. I will refund any overpayments.

Yours faithfully
L. A. Lewis
Managing Director
COMPUTER SERVICES PTY. LTD.

Calculate the Customs/Sales tax by dividing the total cost (US\$) by 40% and 55% import duty due as shown in the following example :-

Total Cost (US\$)	100.00	Total Cost (US\$)	100.00
less 40%	40.00	Less 20% discount	-20.00
	-----	Add despatch cost	24.00
Duty is 55% of	60.00	Add customs duty	33.00
Duty due is	33.00	Total Due (US\$)	137.00

Cassette Recorders

Wanted, CTR-80 or CTR-80A cassette recorders in any condition. I will pay any reasonable price. See me at club meetings or phone me at the number listed below.

Geza Dujmovich
(047) 74-1685

For Sale

DICK SMITH Laboratory Oscilloscope - in excellent condition - cost \$199 - Sell \$130.

DEC Decwriter II Serial Terminal - Full 15" wide adjustable tractors
Full ASCII keyboard - 250 page manual
Upper and lower case printing - Sell \$360.

Gary Bryce
(02) 628-5058

DICK SMITH GP-100 Dot Matrix Printer - 30cps, 240mm wide paper - cost \$495 - Sell \$290 ono
- Upper/Lower case and Graphics

Denis Pagett
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