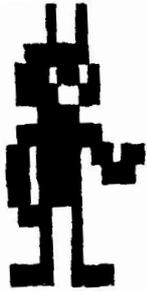


TRS8BIT



BACK IN THE LATE 1970'S, I BUMPED INTO AN OLD FRIEND, BRIAN PAIN, WHO MENTIONED THAT HE HAD JUST PURCHASED A TRS-80, MODEL 1, AND WITH ANOTHER COLLEAGUE, LEON HELLER, WAS

SETTING UP A USER-GROUP FOR ANYONE INTERESTED IN TRS-80'S. HAVING JUST BOUGHT A MODEL 1, I JUMPED AT THE OPPORTUNITY TO JOIN WITH A GROUP OF LIKE-MINDED INDIVIDUALS.

ORIGINALLY CALLED THE NATIONAL TRS-80 USER GROUP, THE GROUP WENT FROM STRENGTH TO STRENGTH AND BY THE MID 80'S HAD OVER 900 MEMBERS. WORKSHOPS WERE HELD ON A REGULAR BASIS THROUGHOUT THE COUNTRY, TOGETHER WITH PUBLISHING A MONTHLY NEWSLETTER, 'NATGUG NEWS'.

30 YEARS ON, I ASSUMED THAT ALL THINGS 'TRS-80' HAD LONG SINCE PASSED AWAY, AND I, ALONG WITH MY MODEL 1, WAS IN A MINORITY OF ONE. THEN I CAME ACROSS IRA GOLDKLANG'S TRS-80 WEB SITE -

WWW.TRS-80.COM

I DON'T THINK I'VE SEEN SO MUCH 'TANDY' INFORMATION IN ONE PLACE (EVEN DURING THE 1980'S).

IF YOU'VE THE SLIGHTEST INTEREST IN TRS-80'S, TRY AND VISIT THE SITE, IT'S A REAL EYE OPENER!

I THEN WONDERED IF THERE WOULD BE ANY INTEREST IN AN 8-BIT NEWS-SHEET (OR POINT OF CONTACT) RELATING TO ANY OF THE TANDY 8-BIT COMPUTERS WITHIN (BUT NOT EXCLUSIVELY) THE UK.

THE EASIEST WAY TO FIND OUT, I THOUGHT, IS TO PRODUCE A SMALL NEWS-SHEET, TRY AND PASS THE WORD AROUND AND SEE WHAT, (IF ANYTHING), HAPPENS.

THIS FIRST, 4 PAGE 'STARTER' NEWS-SHEET IS AVAILABLE FOR DOWNLOADING AT

TRS-80.ORG.UK

IT'S IN PDF FORMAT. IF YOU ENCOUNTER PROBLEMS, CONTACT ME AT -

DUSTYM@BEEB.NET

AND I WILL DO MY BEST TO SEND YOU A COPY ASAP, EITHER BY EMAIL OR GOOD-OLD SNAIL-MAIL.

AFTER THIS, THE FIRST ISSUE, ANY FURTHER PUBLICATIONS WILL DEPEND ON THE RESPONSE I RECEIVE.

ITEMS FOR PUBLICATION, CAN BE ARTICLES, FRIENDS-REUNITED QUESTS ETC. EMAIL TO ME ANYTHING THAT YOU MIGHT THINK IS OF INTEREST (SO LONG AS IT LEGAL!) AND I'LL PUBLISH IT. WITH ANY LUCK, A SECOND EDITION COULD APPEAR.

---= 000 =---

IT WAS MY INTENTION TO PRODUCE THE NEWS-SHEET USING MY MODEL1 AND 'PENCIL' BUT I CAN'T FIND MY CASSETTE COPY OF PENCIL, AND MY OLD TELETYPE PRINTER WAS VICTIM OF A CLEAR-OUT, MANY MOONS AGO. SO, MS PUBLISHER AND MY FAVOURITE TRUETYPE FONT 'TELEPRINTER' CAME TO THE RESCUE.



BYE FOR NOW

DUSTY

AT THE
READY>
PROMPT



IT REALLY IS QUITE LIKE OLD TIMES, SAT IN FRONT OF A MODEL1. THE 'FUN' RETURNS TO COMPUTING THE MINUTE MY MODEL 1'S SWITCHED ON. THE SAME EFFECT CAN BE ACHIEVED WHEN RUNNING MATHEW REED'S TRS-80 EMULATOR ON YOUR PC.

I PURCHASED THE DOS VERSION SOME TIME AGO AND AM NOW JUST TRYING OUT THE WINDOWS VERSION. THIS VERSION EMULATES THE MODELS 1,3 & 4, WHEREAS THE DOS VERSION HAS JUST MODELS 1 & 3. THE SHAREWARE VERSIONS ARE AVAILABLE FROM -

WWW.ARROWWEB.COM/MKR

IT'S QUITE A REMARKABLE PIECE OF SOFTWARE. THE WINDOWS VERSION EVEN ALLOWS A MODEL 1 TO USE A VIRTUAL CASSETTE FOR SAVING AND LOADING PROGRAMS. IT WORKS FIRST TIME, EVERY TIME! (I CAN'T REMEMBER THAT HAPPENING OFTEN!)

---- 000 ----

IN THE TRUE SPIRIT OF THE MODEL1, I SET ABOUT THE OLD CHESTNUT, A PROGRAM TO CALCULATE THE DATE OF EASTER.

IT SEEMS EASTER FALLS ON THE 1ST SUNDAY FOLLOWING THE ARBITRARY 'PASCHAL FULL MOON', WHICH DOES NOT NECESSARILY COINCIDE WITH A REAL OR ASTRONOMICAL MOON. THE 'KEY' TO A PASCHAL FULL MOON IS CALCULATED BY ADDING 1 TO THE REMAINDER OBTAINED BY DIVIDING THE YEAR BY 19 AND

THEN APPLYING PRE-DETERMINED DATE INFORMATION. THUS, FOR THE YEAR 2000, THE KEY IS 6 (THE 6TH DATA STATEMENT) OR THE 18TH APRIL.

IT IS THEN NECESSARY TO CALCULATE THE DAY OF THE WEEK FOR THE 18TH APRIL, WHICH HAPPENS TO BE A TUESDAY. THEN ADD 5 TO THE DATE BRINGING IT TO THE NEXT SUNDAY. IF THE PASCHAL FULL MOON FALLS ON A SUNDAY, THEN EASTER IS THE FOLLOWING SUNDAY.

I'VE USED A NUMBER OF IDEAS FROM LEWIS ROSENFELDER'S WONDERFUL BOOK 'BASIC, FASTER & BETTER' AND HAVE WRITTEN THE PROGRAM SO THAT IT CAN BE RUN ON A LEVEL 2, MODEL 1. (I NEVER MANAGED TO AFFORD DISKS ON MY ORIGINAL SET-UP).

BRIEFLY, THE PROGRAM RUNS AS FOLLOWS -

```
100 INPUT THE YEAR
110 GET THE PASCHAL KEY
120 READ THE DATA
130 GET THE DAY & MONTH
140 ASSIGN DAY & MONTH
150 USE ROSENFELDER'S DAY
    NUMBER CALCULATION (FROM
    01JAN1900)
160 CALCULATE THE DAY OF THE
    WEEK (0 = FRIDAY)
170-200 ADD THE 'EXTRA' DAYS
    UP TO THE NEXT SUNDAY
    AND CHECK FOR DATES >
    31ST MAR
300 PRINT THE ANSWER
```

THE PROGRAM SEEMS TO WORK OK. IT SHOULD BE CORRECT FOR THE 20TH & 21ST CENTURIES. CAN YOU IMPROVE IT? MAKE IT SMALLER OR RUN FASTER? IS THERE A BETTER WAY? GET BASHING THOSE KEYS AND LET ME HEAR FROM YOU.

---- 000 ----

PROGRAM TO CALCULATE THE DATE OF EASTER FOR A GIVEN YEAR

```

100 INPUT "WHICH YEAR FOR EASTER ";Y
110 E=Y-INT(Y/19)*19+1
120 FOR X=1TOE:READA$:NEXTX
130 D=VAL(LEFT$(A$,2)):M=VAL(RIGHT$(A$,2))
140 IF M=3 THEN DP$="MAR" ELSE DP$ = "APR"
150 N=Y*365+INT((Y-1)/4)+(M-1)*28+VAL(MID$("000303060811131619212426",
(M-1)*2+1,2))-((M>2)AND((YANDNOT-4)=0))+D
160 A=N-INT(N/7)*7
170 IF A>1 THEN D=D+(9-A)
180 IF A=0 THEN D=D+2
190 IF A=1 THEN D=D+A
200 IF D>31 THEN D=D-31:DP$="APR"
300 PRINT"EASTER IS THE ";D;DP$
900 DATA 1404,0304,2303,1104,3103,1804,0804,2803,1604,0504
920 DATA 2503,1304,0204,2203,1004,3003,1704,0704,2703

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---= 000 =---

NOW HERE'S AN ARTICLE FROM A PHOTOCOPY WHICH I HAVE HAD FOR OVER 25 YEARS!

IT'S SO OLD, IT'S ON THAT 'WAXIE' TYPE PAPER WE ALL LOVED. IT IS IN SUCH POOR CONDITION DUE TO FADING IN THE LIGHT, IT WILL NOT COPY WELL. SO PLEASE, DON'T ZAP YOUR ONLY OR MASTER COPY

IT'S THREE MODS TO THE DISK VERSION OF ELECTRIC PENCIL TO SPEED THINGS UP A BIT AND ALSO TO SAVE YOU BUTCHERING YOUR KEYBOARD TO ADD ON A CONTROL KEY. I ALWAYS THOUGHT THE DESIGN OF THE 80 WAS TOO NEAT TO MESS ABOUT WITH. THAT ADDITIONAL KEY JUST DIDN'T LOOK RIGHT!

USING YOUR ELECTRIC PENCIL WITH THE RADIO SHACK LOWER CASE MODIFICATION

THE ADAPTATION OF THE ELECTRIC PENCIL TO THE RADIO SHACK COMPUTER REQUIRES A CONTROL KEY TO ACCESS THE COMMAND TABLE. SINCE THE RADIO SHACK LOWER CASE MODIFICATION DOES NOT INCLUDE A CONTROL KEY, THIS MAKES IT IMPOSSIBLE TO USE

ELECTRIC PENCIL WITH THE RADIO SHACK MODIFICATION. FOR MANY PEOPLE THIS IS NOT A PROBLEM, AS RADIO SHACK SCRIPSIT IS BETTER THAN THE ELECTRIC PENCIL FOR MOST USERS AND COSTS LESS. HOWEVER THERE ARE STILL SOME USES FOR PENCIL, AND SOME PEOPLE PREFER THE MORE EXPENSIVE LESS POWERFUL SYSTEM.

THESE MODIFICATIONS TO THE ELECTRIC PENCIL WILL ALLOW YOU TO USE THE BREAK KEY FOR A CONTROL KEY, AND THE CLEAR KEY FOR THE FUNCTIONS THAT THE BREAK KEY IS NORMALLY USED FOR.

THESE MODIFICATIONS WERE PROVIDED BY JEFF BROWN ON THE SOURCE, TESTED BY CLAY SCHNEIDER, AND VERIFIED BY GEORGE BLANK.

THIS ARTICLE WAS WRITTEN USING THE MODIFIED PENCIL. THE MODIFICATIONS ALSO SKIP OVER THE UPPER/LOWER CASE QUESTIONS, THE TITLE, CHANGE THE DEFAULT PRINT MARGIN TO 5, AND START YOU IN THE "CONTROL K" SUB COMMAND MODE.

USE THE DFS FUNCTION OF SUPERZAP 3.0 TO MAKE THE FOLLOWING CHANGES TO PENCIL/ CMD: (MAKE THESE CHANGES ON

A COPY OF YOUR PROGRAM TO
PROTECT THE ORIGINALS)

ZAP 1 WILL:-
AT THE START-UP, SKIP THE
TITLE CARD.
ALLOW FOR START-UP DEFAULT
PRINT MARGIN GREATER THAN 0.
START-UP WITH KEYBOARD IN
LOWERCASE-ENTRY MODE.
START-UP IN CONTROL "K"
SUBCOMMAND MODE.
*THE "05" IS THE START-UP
DEFAULT MARGIN AND MAY BE
CHANGED TO WHATEVER VALUE YOU
LIKE.

ZAP 2 WILL:-
MAKE THE BREAK KEY INTO THE
CONTROL KEY, INSTEAD OF THAT
OBNOXIOUS HIDDEN LITTLE
BUTTON. USE CLEAR WHENEVER
BREAK IS NORMALLY CALLED FOR
(EXITING CONTROL "K" ETC.).

IMPORTANT
ZAP 1 MUST BE APPLIED FIRST

ZAP 3 WILL:-
SKIP OVER THE "LOWERCASE KIT
INSTALLED" QUESTION,
AUTOMATICALLY ANSWERING "Y"
OR "N"
** "4E" FOR NO.

ZAP 1
F00743 FROM 5A 21 C9 3D 11 6E 59 CD CF 67 CD 79 65
TO 5A 3E 05* 32 2A 5A CD 6D 65 C3 D6 61 65

F000A4 FROM 22 B1 5C 21
TO 22 00 00 21

ZAP 2
F01047 FROM 3A 7F 38 B7 28 28 D9 CD
TO 3A 3F 38 B7 C3 CA 59 CD

F01BC FROM C0 CB 61 20 F6
TO C0 C3 BD 59 F6

F01D9 FROM 5D 1B 17
TO 5D 00 17

F010E1 FROM 5F 1E 5B
TO 5F 00 5B

F010F0 FROM FE 1B CA
TO FE 5D CA

F0069F FROM 00 54 48 45 20 45 4C 45 43 54 52 49 43 20 50 45
TO 00 E5 21 40 38 CB 56 E1 C2 FC 65 C3 06 66 28 04

CONT. FROM 4E 43 49 4C 20 20 28 43 29 20 31 39 37 39 20
TO D9 C3 93 65 3A 40 38 E6 FB 20 F5 C3 BA 65 20

ZAP 3
F016E6 FROM 6C CD CF 67 21
TO 6C 00 00 00 21
F016F5 FROM 5A CD 79 65 E6
TO 5A 3E 59** 00 E6

---= 000 =---

MANY THANKS FOR PERSEVERING THROUGH ALL 4 PAGES! I HOPE IT WAS
OF INTEREST AND HAS BROUGHT BACK A FEW HAPPY MEMORIES OF NEARLY
30 YEARS AGO! (WHERE HAVE THE YEARS FLOWN EH?)
HOW ABOUT SOMEONE (ANYONE?) COMING UP WITH A 'ONE-LINER' BASIC
PROGRAM FOR THE NEXT ISSUE TO AMAZE AND OR AMUSE US? THEY NEVER
CEASED TO CAPTURE MY IMAGINATION.

PLEASE EMAIL ANY CONTRIBUTION TO ME AT DUSTYM@BEEB.NET

TRS8BIT



MANY THANKS TO ALL OF YOU WHO HAVE EMAILED ME. YOUR KIND WORDS OF ENCOURAGEMENT ARE MOST WELCOME.

I AM DELIGHTED TO PRODUCE THIS, THE SECOND EDITION OF TRS8BIT AND EVEN THOUGH CONTRIBUTIONS ARE IN SHORT SUPPLY, I HOPE THERE'S SOMETHING YOU WILL FIND OF INTEREST.

I'VE TRIED TO SORT-OUT BITS FOR HARDWARE AND SOFTWARE FANS EVERYWHERE.

I'VE RESURRECTED AN ARTICLE ON HOW TO MAKE YOUR OWN 'EL-CHEAPO' SERIAL INTERFACE FOR THE MODEL 1. IT WORKS FINE WITH ELECTRIC PENCIL (AND ANY OTHER PROGRAM THAT USES BIT 0 OF PORT FFH, 255 DECIMAL FOR SERIAL OUTPUT TO A PRINTER (THE CASSETTE OUTPUT LINE). I'VE JUST PURCHASED ALL THE COMPONENTS AND STILL HAD CHANGE FROM £3! (ALTHOUGH THE 5-PIN DIN PLUGS WERE CANNIBALISED FROM AN OLD CASSETTE LEAD I FOUND AT A CAR-BOOT). I UNDERSTAND 5-PIN DINs ARE GETTING DIFFICULT TO FIND. I'VE A COUPLE OF SPARES IF YOU ARE HAVING PROBLEMS SOURCING THEM - PLEASE EMAIL ME AND I'LL SEND ONE OFF TO YOU. THEY ARE FREE BUT HELP WITH THE POSTAGE COSTS WOULD BE APPRECIATED.

I'VE HAD A REQUEST, VIA EMAIL, ASKING IF I KNOW OF ANYONE WHO IS ABLE TO OFFER A POSTAL REPAIR SERVICE (WITHIN THE UK) ON MODEL 1'S AND 3'S. IF YOU CAN HELP, PLEASE EMAIL ME WITH CONTACT DETAILS. AND I'LL PASS THEM ON. FOR STARTERS, I'VE AN EXPANSION INTERFACE THAT

SEEMS TO BE BEYOND MY MEAGRE ABILITIES!

THANKS TO ROGER STORRS, OF PC-NATGUG, I'VE MANAGED TO OBTAIN THE MISSING ISSUES OF NATGUG-NEWS WHICH ENABLES ME TO COMPLETE THE INDEX FOR THE FIRST SIX VOLUMES, (COVERING THE PERIOD 1978 TO 1985). THE INDEX IS AVAILABLE FOR DOWNLOADING FROM THE WEB SITE.

WWW.TRS-80.ORG.UK

---= 000 =---

THE MODEL 1 IS 30 YEARS OLD
- HAPPY BIRTHDAY -

---= 000 =---

ALTHOUGH NO ONE HAS SUBMITTED A 'ONE-LINER' I'VE HAD A QUICK GO MYSELF. IT'S THE USUAL GAME OF 'CATCH A CHARACTER' IT EVEN MANAGES TO KEEP THE SCORE FOR YOU! I HOPE YOU TYPE IT IN AND HAVE A GO. IT'S CRYING-OUT FOR SOME IMPROVEMENT(S)/ENHANCEMENTS SO I'D LOVE TO SEE WHAT YOU GUYS CAN DO TO IT.

I'VE RECENTLY ACQUIRED (AT A CAR-BOOT) A LARGE BOX OF 5.25 DISKS AND CASSETTES. ALTHOUGH THE DISKS ARE SECOND-HAND, THEY SHOULD BE SUITABLE FOR USE AS 40TRACK DOUBLE SIDED SINGLE DENSITY. (AFTER RE-FORMATTING). IF YOU'RE SHORT OR IN NEED OF SOME DISKS, PLEASE LET ME KNOW AND I'LL GET SOME OFF TO YOU ASAP. THE CASSETTES ARE BRAND NEW AND THE CASES ARE THE ONES WITH 5 SCREWS HOLDING THEM TOGETHER. ONCE AGAIN, BOTH ITEMS ARE FREE BUT HELP WITH THE POSTAGE COSTS WOULD BE APPRECIATED.

PLEASE EMAIL ME FOR FURTHER
DETAILS.

A REGULAR CONTRIBUTOR TO TRS-
TIMES WAS DR MICHAEL ECKER WHO
WAS, UNTIL ITS DEMISE IN
NOVEMBER 2006, THE EDITOR IN
CHIEF OF THE MAGAZINE
'REC' (RECREATIONAL &
EDUCATIONAL COMPUTING).
HE IS OFFERING VARIOUS DVD
DEALS OF PAST ISSUES
(INCLUDING PROGRAMS) ON HIS
WEB SITE -

[HTTP://MEMBERS.AOL.COM/
DRMWECKER/REC.HTML](http://members.aol.com/drmwecker/rec.html)

IT'S WELL WORTH A LOOK. THERE
ARE SOME REALLY EXCITING
ARTICLES REFERRED TO. (YET
ANOTHER ITEM TO GO ON MY WISH-
LIST)!

I'VE HAD AN EMAIL FROM MATHEW
REED REPLYING TO VARIOUS
QUESTIONS I HAD RAISED WITH
HIM REGARDING THE DOS AND
WINDOWS EMULATORS. HE
INTIMATED THAT HE MAY GO AHEAD
AND INCLUDE WITHIN HIS MODEL 1
AND 3 EMULATOR, FACILITIES FOR
USING THE EXATRON STRINGY-
FLOPPY. IF THAT IS TO BE THE
CASE, I ASKED HIM TO BEAR IN
MIND THAT WE IN THE UK WERE
MORE FAMILIAR WITH THE ACULAB
FLOPPY-TAPE. SO IF THE SYSTEM
USED RELIES ON A ROM IMAGE
BEING PRESENT IN THE CORRECT
DIRECTORY ON THE PC, ALL I
(WE) NEED TO DO IS GET OUR
HANDS ON AN ACULAB, TO DOWN
LOAD THE ROM (AS WITH THE
LEVEL 2 ROM) AND BINGO! @ZEN
AND @PENCIL RIDE
AGAIN.



BYE FOR
NOW
DUSTY.



AT THE
READY>
PROMPT



AS YOU CAN SEE BELOW, I'VE
COME UP WITH A ONE-LINER,
JUST TO START THE BALL
ROLLING! THE OFT LAMENTED
PHRASE I WAS SUBJECTED TO AT
SCHOOL, "COULD DO BETTER IF
TRIED HARDER" SPRINGS TO
MIND!

'GRAND THEFT AUTO' IT AINT,
BUT A REASONABLE FIRST
ATTEMPT I HOPE?

IT'S QUITE EASY TO RUN, JUST
KEEP PRESSING THE NUMBER
KEYS TO MOVE THE CATCHER, ON
THE TOP ROW, TO THE RIGHT.
IT'S 1 POINT FOR AN "!" MARK
AND 10 FOR A "*" EVERY TIME
THEY GO THROUGH THE GAP.

THE FOLLOWING WAS AMONG MY
BITS OF NOTES I'VE
ACCUMULATED OVER TIME. (MY
HANDWRITING WAS ALWAYS JUST
AS BAD IT SEEMS!)

ASSEMBLER (OR EVEN BASIC)
SOUND ROUTINES NORMALLY SEND
THE VALUES 1 AND 0
ALTERNATELY OUT THE CASSETTE
PORT (255) WITH A VIBRATION
COUNT TO CREATE SOME SOUND.
IF THE PROGRAMME DISPLAY
RUNNING THE ROUTINE USES
DOUBLE SIZED CHARACTERS,
CHR\$(23), AS SOON AS YOU
SEND THE 1 OR 0 OUT OF THAT
PORT, IT FLIPS THE DOUBLE
SIZE CHARACTERS TO SINGLE
SIZE AND WRECKS THE SCREEN
IMAGE. HOWEVER, IF YOU SEND
8 AND 9 INSTEAD OF 0 AND 1
THE DOUBLE SIZE DISPLAY
REMAINS INTACT.

---- 000 ----

```
1 CLS:A#=CHR$(143)+CHR$(143)+"-> <-"+CHR$(143)+CHR$(143):FORC=0T
D1STEP0:B#=INKEY#:E=VAL(B#)*5:FORD=1T07:S=S+PEEK(15364+E)-32:PRI
NT@E,A#::PRINT@54,"SCORE":S#:X=RND(124)+895:PRINT@X," !!! ":PR
INT@X,"! * !":NEXTD:NEXTC
```

ULTRA-SIMPLE SERIAL
PRINTER INTERFACE.
THE ORIGINAL AND BRILLIANT
IDEA FOR A SIMPLE SERIAL
PRINTER INTERFACE WAS DEvised
BY LEON HELLER, CO-FOUNDER,
ALONG WITH BRIAN PAIN, OF
NATUG. MY OLD PAL, DAVID
GODDARD, AND I, DECIDED TO
SLIGHTLY AMEND AND THEN BUILD
THE INTERFACE AS DETAILED ON
THE PRINTED CIRCUIT OVER-LEAF
AND I RAN VARIOUS SERIAL
PRINTERS FROM IT ALL THE WHILE
I HAD MY ORIGINAL MODEL 1.

IT IS A VERY SIMPLE, LOW-COST
CIRCUIT. IT DERIVES ITS POWER
FROM THE MODEL 1 POWER SUPPLY
VIA A BRIDGE RECTIFIER AND
CAPACITOR COMBINATION
DELIVERING ABOUT +9 & -9
VOLTS. THE ACTUAL INTERFACE
CONSISTS OF A 741 OPERATIONAL
AMPLIFIER CONNECTED AS A
COMPARATOR WITH A 100K POT.
PROVIDING THE THRESHOLD
ADJUSTMENT. IT IS ADVISABLE TO
USE A 10-TURN CERMET TRIMPOT
FOR THE FUNCTION AS, IF I
REMEMBER CORRECTLY, THE
ADJUSTMENT CAN BE A LITTLE
TRICKY.

TO SET THE CIRCUIT UP MERELY
CONNECT IN LINE WITH THE POWER
SUPPLY AND KEYBOARD AND PLUG
IN THE CASSETTE OUTPUT LEAD
FROM THE KEYBOARD UNIT. DON'T
CONNECT THE PRINTER AT THIS
STAGE. USE THE APPROPRIATE
COMMAND TO ACTIVATE THE
PRINTER AND MONITOR THE OUTPUT
FROM THE INTERFACE WITH A
VOLTMETER OR A 'SCOPE. ADJUST
THE 100K TRIMPOT UNTIL YOU GET
THE OUTPUT SWINGING BETWEEN +
AND - 9 VOLTS, ENSURING THAT
WHEN THE OUTPUT IS BETWEEN
CHARACTERS (A MARK CONDITION)
AND IDLING, -9 VOLTS IS ON THE
OUTPUT FROM THE INTERFACE.
CONNECT UP THE PRINTER AND YOU
SHOULD BE AWAY

CONSTRUCTION IS NON-CRITICAL
AND ANY CONVENIENT
CONSTRUCTION TECHNIQUE CAN
BE EMPLOYED. OURS WAS BUILT
UPON A SMALL PRINTED CIRCUIT
BOARD AND MOUNTED IN A SMALL
PLASTIC SWEET BOX! I CAN'T
GUARANTEE THAT THE RS232
SPECIFICATION IS MET 100%
BUT IT WORKED WELL WITH
ELECTRIC PENCIL AND BASIC.
(ALTHOUGH BASIC NEEDED A
DRIVER IN PROTECTED MEMORY).

THE OLD TELETYPE I HAD RAN
AT 110 BAUD AND MADE A
FABULOUS NOISE, WITH OUTPUT
VERY SIMILAR TO THIS
PUBLICATION! I LATER
UPGRADED TO A 'TERMIPRINTER'
WHICH HAD LOWER CASE AND
NECESSITATED THE MODEL 1
LOWERCASE MOD (DONE, IF I
REMEMBER CORRECTLY, BY OZ
HOUSE).

I REMEMBER THAT LEON DROVE
THE RS232C INTERFACE FROM
HIS MODEL 2 TO HIS MODEL 1
USING THIS INTERFACE QUITE
HAPPILY.

I WAS AMAZED THAT ALL OF THE
PARTS WERE STILL SO EASILY
AVAILABLE (EXCEPT THE 5-PIN
DINS AND AS I SAID EARLIER,
I'VE A COUPLE OF SPARES IF
YOU ARE HAVING PROBLEMS
LOCATING THEM).
HAVING JUST PURCHASED ALL
THE REQUIRED BITS, I SHALL
HAVE TO GIVE DAVE A NUDGE
AND SEE IF HE'S STILL GOT A
WARM SOLDERING IRON! (ONLY
KIDDING DAVE!)

I'LL TRY AND
FIND A COPY OF
THE BASIC
PROGRAM NEEDED
TO ENABLE USE OF
THE INTERFACE
FROM WITHIN
LEVEL 2 BASIC.



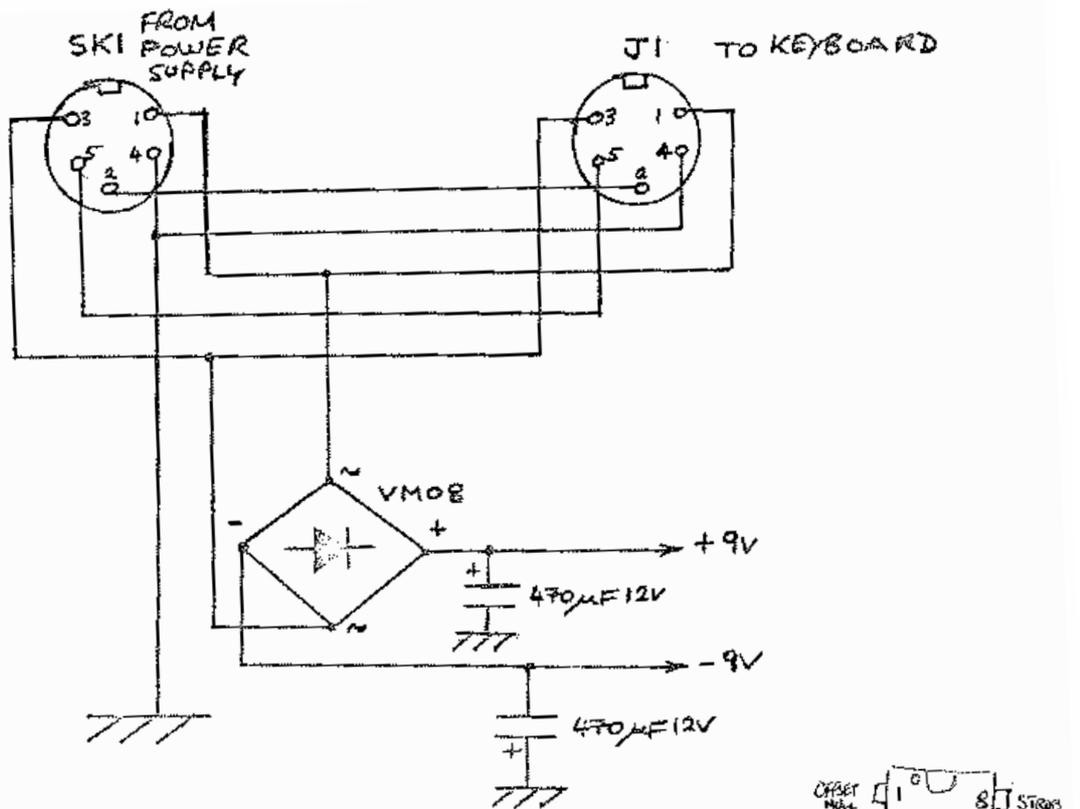


FIG. 1 - Power supply

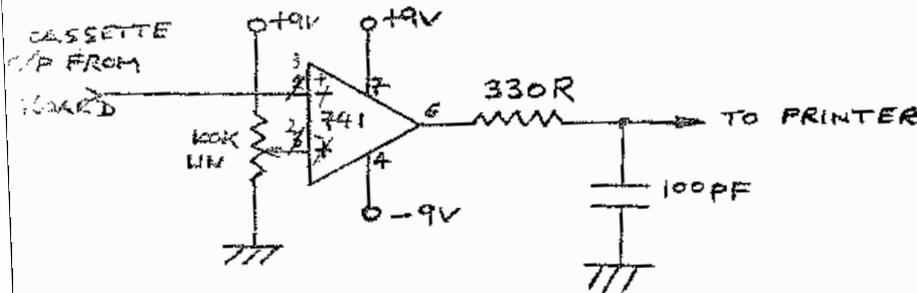
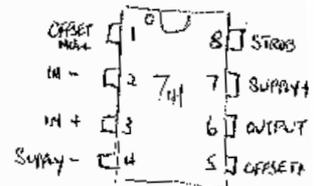


FIG. 2 - Interface circuit

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I HOPE YOU'VE ENJOYED ISSUE NUMBER 2, ENOUGH TO 'HAVE A GO' YOURSELF, EITHER WITH A ONE-LINER OF YOUR OWN, OR BUILDING THE SERIAL INTERFACE. PLEASE LET ME KNOW HOW YOU GET ON, I'D LOVE TO HEAR FROM YOU WITH ANY COMMENTS, ARTICLES OR SUGGESTIONS. WITH ANY LUCK, ISSUE 3 SHOULD 'HIT THE STREETS' DURING SEPTEMBER '07 IN THE MEANTIME, YOU CAN, AS USUAL, CONTACT ME AT

DUSTYM@BEEB.NET

TRS8BIT



WELCOME TO THE THIRD EDITION OF TRS8BIT. ONCE AGAIN I'VE TRIED TO FIND BITS (NEW AND OLD) OF INTEREST FOR EVERYONE.

I HAVEN'T RECEIVED ANY CONTRIBUTIONS FOR THIS ISSUE BUT I HOPE I'VE MANAGED TO FIND QUITE A FEW INTERESTING LITTLE BITS NONETHELESS. I USUALLY TEST ALL PROGRAMS ON MATHEW REED'S (DOS) MODEL 1 EMULATOR SO DON'T BE SHY IN TRYING THEM FOR YOURSELF. AFTER ALL, THERE'S A SHAREWARE VERSION AVAILABLE FROM HIS WEB-SITE.

ALL AND ANY CONTRIBUTIONS, FOR THE NEXT ISSUE (WHICH WILL BE THE XMAS ONE), WILL BE GRATEFULLY RECEIVED!

THERE'S A COUPLE OF ONE-LINERS JUST FOR THE FUN OF IT. VARIOUS HINTS AND TIPS FOR BASIC PROGRAMMERS AND A SUPER MACHINE CODE ROUTINE THAT LAURIE (ZEN) SHIELDS DEvised AS PART OF ONE OF HIS TRAINING SESSIONS. IT'S A MACHINE CODE SOURCE OF A PROGRAM TO DUMP THE SCREEN TO A PRINTER. THE OBJECT CAN THEN BE CALLED VIA A USER(N) FROM BASIC. IT'S SUITABLE FOR THE MODEL 1 (WITH OR WITHOUT LOWER CASE) AND THE MODEL 3. THERE'S ALSO A (THE?) SOLUTION TO THE GAME OF ANDROID NIM. (TAKEN FROM AN ORIGINAL ARTICLE BY DR A.R. MANSON).



EVERYWHERE I SEEM TO LOOK AT THE MOMENT, THERE ARE EMAILS AND NOTES ABOUT THE STOPPING OF DOWNLOADS FROM IRA'S WEB-SITE. FROM WHAT I GATHER, HE'S UPSET AT SOMEONE SELLING A CD CONTAINING SOME OF THE DOWNLOADS AVAILABLE FROM HIS SITE.

I DON'T THINK STOPPING DOWNLOADS WILL HELP THE SITUATION IN ANY WAY. IT WILL, IN MY OPINION, MAKE THE CD'S FOR SALE MORE VALUABLE. AFTER ALL, THE INFORMATION THEY CONTAIN IS NO LONGER AVAILABLE FOR FREE!!

IRA IS DOING A REMARKABLE JOB IN RUNNING TRS-80.COM. IT MUST TAKE AN INORDINATE AMOUNT OF TIME AND MONEY TO RUN THE SITE, AND PERHAPS HE FELT THAT THIS WAS 'THE LAST STRAW'.

I DO FEEL SORRY ABOUT IT THOUGH, HAVING THE DOWNLOADS AVAILABLE WAS SUCH A UNIQUE AND VALUABLE FACILITY FOR ALL THE TRS-80 COMMUNITY.

I'VE HAD AN EMAIL FROM ALAN POUND, THE FOUNDER OF THE ACULAB AND THE FLOPPY TAPE. I CONTACTED HIM TO SEE IF HE HAD ANY TECHNICAL INFORMATION ABOUT THE FT BUT WAS SORRY TO HEAR THAT HE HAS NO INFORMATION REGARDING THE FLOPPY TAPE WHATSOEVER. IT'S ALL DISAPPEARED INTO THE MISTS OF TIME.

I PROMISED THAT, IF ANYTHING OF INTEREST COMES TO LIGHT, I WOULD LET HIM KNOW, SO CAN YOU HELP? SO FAR I'VE MANAGED TO FIND A COPY OF THE OPERATOR MANUAL, A COPY OF THE PROGRAM DIRTOP/BAS AND A REVIEW OF XBAS, BUT THAT'S ABOUT IT FOR THE MOMENT.

HAVE YOU ANYTHING AT HOME

TUCKED AWAY IN THE LOFT, SUCH AS ADVERTS, MANUALS FOR BOTH SOFTWARE OR HARDWARE ETC? PLEASE CONTACT ME IF YOU HAVE SIGHT OF ANY.

STOP PRESS! (SORT OF). I'VE JUST PURCHASED A QUICK-PRINTER 2 ON EBAY COMPLETE WITH MANUAL. I'LL SEND A PDF COPY OF THE MANUAL TO IRA AT TRS-80.COM, AS I KNOW HE HASN'T ONE. AS DOWN LOADS ARE STILL PROHIBITED I'LL SEE IF THERE IS ENOUGH SPACE ON TRS-80.ORG.UK AND SET IT UP FOR ANYONE WHO WANTS A COPY.



BYE FOR NOW
DUSTY.



==== 0000 ====

AT THE
READY>
PROMPT



IF YOU NEED TO DETERMINE A PRINT@ POSITION AND ONLY KNOW THE X AND Y CO-ORDINATES, THIS IS THE SIMPLE FORMULAE REQUIRED -

$P = \text{INT}(Y/3) * 64 + \text{INT}(X/2)$

AND TO REVERSE THE PROCEDURE ONLY KNOWING THE PRINT@ NUMBER -

$Y = 3 * \text{INT}(P/64)$
 $X = 2 * (P - 64 * Y/3)$

THIS IS A VERY ADDICTIVE ONE LINER. IT'S FROM AN ORIGINAL IDEA BY JAMES PETIVAN FROM NEW ORLEANS OVER 25 YEARS AGO! I THINK IT IS A VERY NEAT BIT OF CODING. IF YOU WANT TO MAKE IT EASIER, WIDEN THE GAP BETWEEN THE EXCLAMATION MARKS AND THE FULL STOP.

```
10 CLS:J=27:P=15391:FORM=0TO1STEP0:T=RND(99):FORL=RND(T)TOTSTEP  
RND(9)/9:J=50-ABS(ABS(J+SIN(L))-50):A=PEEK(14400)/32:P=P-((AAND1)  
-(A/2AND1))*((PEEK(14464)+1):PRINTTAB(J)"!!! . !!!":IFPEEK(  
P)=33PRINT"SCORE:"SELSEPOKEP,191:S=S+1:NEXTL,M
```

FOR THOSE VISICALC AND ELECTRIC PENCIL USERS DON'T FORGET THAT SAVING A VC FILE USING CMD"P" THEN "FILE", THE VC FILE IS SAVED WITH THE SUFFIX /PRF. JUST RENAMING IT TO /PCL WILL ENABLE IT TO LOAD INTO ELECTRIC PENCIL.

PRINTING BLOCKS OF GRAPHIC CHARACTERS TO THE SCREEN CAN BE QUITE SLOW, (EVEN WHEN POKEING) SO THE FOLLOWING MIGHT BE OF INTEREST. NOT AS QUICK AS MACHINE CODE BUT NEVER THE LESS, QUITE IMPRESSIVE FOR SHORT DISPLAY RE-BUILDING ETC. HERE'S AN EXAMPLE -
PRINT@N,STRING\$(N,CHR\$(191))
HUMMM .. MUST BE WORTHY OF INCLUSION IN A ONE-LINER DON'T YOU THINK?

HERE'S A TIP I PICKED UP FROM LAURIE SHIELDS, FOR ONE OF THE SMALLEST MACHINE CODE UTILITIES AVAILABLE ON ANY DISK SYSTEM. IT'S FOR USERS OF THE DISK VERSION OF ELECTRIC PENCIL. THE PROGRAM HAS NO CODING AND IS SIMPLY AN EXECUTION ADDRESS OF 5CC5H (PENCIL'S RE-ENTRY POINT). SO IF EVER YOU'RE IN THE MIDDLE OF WRITING A PENCIL FILE AND THE SYSTEM LOCKS OR REBOOTS, SIMPLY KEY-IN PENCRA\$H/CMD (OR WHATEVER NAME YOU'VE GIVEN THE PROGRAM) AND BINGO!

YOU'RE BACK IN BUSINESS. ONE OR TWO CHARACTERS ON THE LINE WITH THE CURRENT BLINKING CURSOR MAY BE ALTERED, BUT THE REST OF THE TEXT WILL BE THERE. THE SOURCE CODE IN EDTASM FORMAT IS

END SCC5H

OR, IF YOU PREFER (AND WHO WOULDN'T) ZEN FORMAT

EXEC SCC5H

END

YOU CAN EVEN CREATE A CMD PROGRAM USING BASIC BY TYPING THE FOLLOWING

```
10 OPEN '0',1,"PENCRA$H/CMD"  
20 PRINT#1,CHR$(2);CHR$(2);CHR$(&HC5);CHR$(&HC5)  
30 CLOSE:END
```

FOR LEVEL 2 CASSETTE USERS, IF PENCIL LOCKS-UP ON YOU, ALL YOU NEED TO DO AFTER RESETTING BACK TO THE READY> PROMPT IS
SYSTEM <ENTER>
/17318 <ENTER>

WITH ONLY 4K, OR EVEN 16K AT YOUR DISPOSAL, EVERY BYTE CAN COUNT! IF YOUR PROGRAM LINE ENDS, FOR EXAMPLE, PRINT "BYE", DON'T FORGET, YOU CAN DROP THE LAST ". THE PROGRAM STILL WORKS OK AND IT SAVES YOU ONE WHOLE BYTE!

---- 000 ----

ANDROID NIM
FROM AN ARTICLE BY
DR. A.R. MANSON

I WAS CAPTIVATED BY THE GAME 'ANDROID NIM', BY LEO CHRISTOPHERSON, AND SO WERE MY KIDS AND NOW, EVEN MY GRANDKIDS TOO! WERE YOU AWARE THAT IT IS A SPECIAL CASE OF THE ANCIENT CHINESE GAME NIM?

THE MOST GENERAL GAME OF NIM MAY HAVE ANY NUMBER OF ROWS AND ANY NUMBER OF ELEMENTS (ANDROIDS?) PER ROW. DETERMINATION OF THE WINNING PLAYER IN THE GAME DEPENDS ONLY ON TWO ITEMS, AFTER ONE LEARNS THE WINNING STRATEGY. THESE TWO ITEMS ARE: (1) WHICH PLAYER MOVES FIRST, AND (2) WHETHER A PLAYER 'WIN' IS DEFINED TO OCCUR WHEN THE PLAYER REMOVES THE LAST ELEMENT OR WHEN THE PLAYER FORCES THE OPPOSING PLAYER TO REMOVE THE LAST ELEMENT. THE GENERAL RULES OF "ANDROID NIM" ARE SIMPLE, AS I'M SURE YOU KNOW, A PLAYER MAY REMOVE ANY NUMBER OF ELEMENTS FROM ANY SINGLE ROW IN HIS TURN, SO LONG AS HE REMOVES AT LEAST ONE AND AT MOST THE NUMBER REMAINING ON THE ROW SELECTED. A WIN IS DEFINED TO OCCUR WHEN THE PLAYER IS ABLE, (OR FORCE HIS OPPONENT) TO REMOVE THE



HERE'S ANOTHER ONE LINER. I'VE TRIED TO CREATE A TWIRLING DOUBLE HELIX EFFECT. SEE IF YOU CAN YOU IMPROVE ON IT!

```
1 A$=CHR$(149):FORB=9T026:FORC=1T050:A=A+.25:PRINTTAB(28+SIN(A)*  
B);A$:PRINTTAB(28+COS(A)*B);A$:NEXTC,B
```

LAST ELEMENT IN HIS TURN. THEN THE GENERAL SOLUTION TO THE R (ROWS) PROBLEM WITH C (COLUMN) ANDROIDS IS AS FOLLOWS. EXPRESS THE ORIGINAL NUMBER OF ANDROIDS ON EACH ROW AS A BINARY NUMBER (0'S AND 1'S).

IF THE NUMBER OF 1'S IN EACH COLUMN OF THE ROWS OF BINARY NUMBERS IS EVEN, THEN THE PLAYER WHO GOES FIRST WILL LOSE, PROVIDED HIS OPPOSING PLAYER USES THE FOLLOWING SIMPLE STRATEGY: WHATEVER NUMBER OF ANDROIDS ARE REMOVED BY THE FIRST PLAYER THE SECOND PLAYER SHOULD RE-EXPRESS THE REMAINING ANDROIDS AS ROWS OF BINARY NUMBER, SCAN THE COLUMNS OF THESE BINARY NUMBERS, AND REMOVE SUFFICIENT ANDROIDS FROM THAT ROW WHICH WILL MAKE THE BINARY REPRESENTATIONS OF THE ROWS HAVE AN EVEN NUMBER OF 1'S IN ALL COLUMNS. CONTINUATION OF THIS STRATEGY WILL ALWAYS RESULT IN A WIN FOR THE PLAYER WHO GOES SECOND.

IF THE NUMBER OF 1'S IN AT LEAST ONE COLUMN IS ODD, THEN THE PLAYER WHO TAKES THE FIRST TURN CAN ALWAYS WIN. THIS IS ACCOMPLISHED BY REMOVING THE APPROPRIATE NUMBER OF ANDROIDS FROM THAT ROW WHICH WILL MAKE THE BINARY REPRESENTATIONS OF THE COLUMNS HAVE AN EVEN NUMBER OF 1'S. AFTER THE OPPOSING PLAYER REMOVES ELEMENTS. THE AFOREMENTIONED STRATEGY IS REPEATED UNTIL THE WIN IS OBTAINED.

THIS PROCESS IS EASY TO DEMONSTRATE. FOR EXAMPLE ANDROID NIM HAS R = 3 ROWS WITH C1 = 7, C2 = 5, AND C3 = 3. IN TERMS OF BINARY NUMBERS THESE C1 MAY BE EXPRESSED AS:

1 1 1 = 7
 1 0 1 = 5
 0 1 1 = 3

NOTE THAT THE THIRD COLUMN OF THE BINARY REPRESENTATIONS CONTAINS AN ODD NUMBER OF 1'S (I.E. 3). THUS THE FIRST PLAYER MERELY REMOVES ONE ELEMENT FROM ANY OF THE THREE ROWS TO GIVE AN EVEN NUMBER OF 1'S IN EACH COLUMN. PLAYER NUMBER 1, THEREAFTER CAN FORCE A SIMILAR SITUATION REGARDLESS OF PLAYER 2'S CHOICE AND THEREFORE CAN ALWAYS WIN. TRY IT!

I HOPE THAT THE GAME SOLUTION GIVEN HERE WILL NOT DETRACT FROM YOUR ENJOYMENT OF NIM; HOWEVER, THERE IS NO WAY TO MAKE NIM A FAIR GAME BY CHANGING ROWS OR COLUMNS, EXCEPT BY ALTERNATING WHICH PLAYER HAS THE OPTION OF THE FIRST MOVE.

---= 000 =---

THE SOURCE CODE OVERLEAF IS A SCREEN DUMP PROGRAM WHICH AN OLD COLLEAGUE, LAURIE SHIELDS, DEvised AS PART OF A MACHINE CODE PROGRAMMING TUTORIAL HE GAVE MANY MOONS AGO. IT'S WRITTEN FOR USE WITH THE 'ZEN' EDITOR ASSEMBLER (WHO WOULD USE ANY OTHER?). THE OBJECT PROGRAM IS DESIGNED TO RUN WITHIN BASIC AS A USER CALL. I REMEMBER ZEN WAS REALLY GREAT AT TURNING MEMORY INTO DATA STATEMENTS. PERHAPS THIS IS A THEME I COULD EXPAND ON IN FUTURE ISSUES?

```
1 CLS:C=RND(9)+3:FORA=0TO6.28STEP.03:R=6*SIN(C*A):X=R*7*COS(A)+6
4.5:Y=R*3*SIN(A)+24.5:SET(X,Y):NEXT:RUN
```

```

;SCRNPRNT
;FROM LAURIE (ZEN) SHIELDS
;
PRINTER: EQU 3BH ;ROM CALL ROUTINE
ORG 8000H ;CAN BE ANYWHERE
LOAD 8000H
START: XOR A ;A REGISTER = ZERO
LD HL,3C80H ;START OF VIDEO
LOOP: LD A,L
AND 3FH ;END OF LINE?
LD A,0DH ;CARRIAGE RETURN CODE
CALL Z,PRINTER ;SEND C/R IF NEEDED
LD A(HL) ;GET NEXT CHARACTER
BIT 6,H ;IS H = 40H
JR NZ,DONE ;YES SO FINISH
INC HL ;ADD 1 TO POINTER
CP 192 ;CANT PRINT IF > 191
JR C,OK1
LD A,"." ;CHANGE GRAPHIC TO A DOT
OK1: CP 20H ;TANDY LOWER CASE MOD?
JR NC,OK2 ;OR MODEL 3 FUNNIES
ADD A,64 ;FOR MODEL 3 LD A,"."
OK2: PUSH AF ;SAVE CHARACTER
LD A,(3840H) ;CONTROL KEYS
BIT 2,A ;(BREAK)
JR NZ,BREAK
POP AF ;RESTORE CHARACTER
CALL PRINTER
JR LOOP ;GO BACK FOR NEXT ONE
BREAK: LD A,(3840H)
BIT 2,A ;WAIT UNTIL BREAK
JR NZ,BREAK ;KEY RELEASED
LD A,0DH ;CARRIAGE RETURN
CALL PRINTER ;CLEAR PRINTER BUFFER
POP AF ;RESTORE THE STACK
DONE: RET
END

```

---= 000 =---

THE ERROR CORRECTIONS OVER I'VE HAD MY LEVEL 2 MANUAL
LEAF I'VE ONLY RECENTLY FOUND OVER 25 YEARS AND WASN'T
IN A TANDY PUBLICATION. AWARE OF THEM!!

YET ANOTHER ONE LINER, JUST TO BRIGHTEN THINGS UP A BIT.
SORRY, BUT I'VE NO ACCREDITATION FOR THIS ONE.

```

10 CLEAR195:R=RND(159)+32:A#=STRING$(64,R):FORX=0T01023STEP64:PR
INT@X,A#;:NEXTX:S=RND(159)+32:C#=STRING$(64,S):FORX=960T00STEP-6
4:PRINT@X,C#;:NEXTX:RUN10

```

Derived Function List Correction

It has come to our attention that our list of derived functions in the Level II Manual (both editions) and in our Double Precision Subroutine Package (26-1704) contain some misprints. All of these lists were taken from the same source and have the same errors.

Please make note of the following corrections and additions to these functions:

The list of Derived Functions contains typographical errors in the following functions:

HYPERBOLIC COSINE: $\text{COSH}(X) = (\text{EXP}(X) + \text{EXP}(-X)) / 2$
HYPERBOLIC TANGENT: $\text{TANH}(X) = -\text{EXP}(-X) / (\text{EXP}(X) + \text{EXP}(-X))$
HYPERBOLIC COTANGENT: $\text{COTH}(X) = \text{EXP}(-X) / (\text{EXP}(X) - \text{EXP}(-X))$

In addition to the typographical errors, you should be aware of the appropriate range of values for which certain of these functions are valid:

INVERSE SINE : $-1 < X < 1$
INVERSE COSINE : $-1 < X < 1$
INVERSE SECANT : $X < -1$ OR $X > 1$
INVERSE HYPER. COSINE : $X > 1$
INVERSE HYPER. TANGENT : $X * X < 1$
INVERSE HYPER. SECANT : $0 < X < 1$
INVERSE HYPER. COSECANT : $X <> 0$
INVERSE HYPER. COTANGENT : $X * X > 1$

The following values are mathematically undefined but, due to round-off error and limited precision, you may get a value from these functions.

TANGENT OF 90 DEGREES AND 270 DEGREES
SECANT OF 90 DEGREES AND 270 DEGREES
COTANGENT OF 0 DEGREES AND 180 DEGREES
COSECANT OF 0 DEGREES AND 180 DEGREES

An example of this type error is:

TAN(1.5708) returns a value

TAN(90 * .01745329) returns a division by zero error indicating that no valid value exists.

1.5708 = 90 * .01745329 in single precision arithmetic, so we would have expected both of the above to have returned /0 errors.

Other values which you may want but which our functions will not provide are:

ARCSIN(-1) = - PI/2
ARCSIN(1) = PI/2
ARCCOS(-1) = PI
ARCCOS(1) = 0
ARCSEC(-1) = - PI
ARCSEC(1) = 0
ARCCSC(-1) = - PI/2
ARCCSC(1) = PI/2

PI = 3.14159 26535 89793 2

Values and formulas derived or confirmed using CRC STANDARD MATH TABLES, 16th STUDENT EDITION.

WELL, THAT'S ABOUT IT FOR THIS, THE 3RD EDITION. HOPE YOU FOUND IT OF SOME INTEREST. HAVE YOU ANY IDEAS OR SUGGESTIONS FOR ARTICLES YOU'D LIKE TO SEE IN THE NEXT EDITION OF TRS8BIT? FEEDBACK IS DEFINITELY IN SHORT SUPPLY, SO DON'T BE BASHFUL, EMAIL ME AT DUSTYM@BEEB.NET

THE NEXT ISSUE, WHICH WILL BE THE CHRISTMAS 2007 ISSUE, SHOULD HIT THE STREETS (WELL THE WEB-SITE AT LEAST) IN EARLY DECEMBER. IN THE MEANTIME, PLEASE KEEP AN EYE ON THE WEB-SITE. I'LL UPDATE IT, AS AND WHEN INTERESTING (8)BITS OF TRS-80 INFORMATION COMES TO LIGHT.

TRS8BIT



DEE AND I WISH ALL OUR READERS AND SUPPORTERS A VERY MERRY CHRISTMAS AND A HAPPY NEW YEAR. MAY ALL YOUR PROBLEMS TURN INTO INTERESTING CHALLENGES DURING 2008.

WELCOME TO THE CHRISTMAS 2007 EDITION OF TRS8BIT. (I CAN'T BELIEVE IT DECEMBER ALREADY. WHERE HAS THE YEAR FLOWN?)

I HOPE I'VE FOUND SOMETHING OF INTEREST FOR EVERYONE IN THIS, THE XMAS ISSUE.

I HAVE AN EXCELLENT ARTICLE BY ROY T BECK, WHICH FIRST APPEARED IN TRS-TIMES. ROY, IN HIS USUAL EXPERT MANNER, PRODUCED AN ARTICLE WITH THE MODEST TITLE OF 'SOME THOUGHTS ON RADIO SHACK PRINTERS'. IT IS ONE OF THE MOST REMARKABLE PIECES OF RESEARCH ON TANDY PRINTERS I'VE COME ACROSS! ROY EVEN QUOTES THE RS RIBBON CATALOGUE NUMBER!. I'VE REFERRED TO THIS ON A NUMBER OF RECENT OCCASIONS WHEN PRINTERS COME UP FOR SALE ON EBAY AND THOUGHT IT WAS WELL WORTH STAR BILLING ON A REPRINT.

THERE'S THE USUAL COUPLE OF ONE-LINERS, (JUST FOR THE HECK OF IT). I HAVE NOTICED THAT NINTENDO ARE ADVERTISING 'BRAIN TRAINING' PROGRAMS ON THEIR DS COMPUTER. SO NOT TO BE OUTDONE, I'VE INCLUDED A ONE-LINER THAT HELPS WITH MENTAL ARITHMETIC. (JUST TRY AND CONSISTENTLY ANSWER THE QUESTIONS UNDER THE

COUNT OF 50! IT CAN BE DONE BUT I FOUND THAT I NEEDED TO CONCENTRATE REALLY HARD!)

THERE IS, OF COURSE, THE USUAL COUPLE OF SNIPPETS IN 'AT THE READY PROMPT' AND TO FINISH OFF, PUTTING EVERYONE IN THE XMAS MOOD THERE'S A SMALL PROGRAM WHICH PRINTS A NUMBER OF 'MERRY XMAS'S SO THAT IF YOU SQUINT AT THE PRINTOUT, IT LOOKS LIKE A COWBOY! THIS PROGRAM WAS WRITTEN USING MATHEW REEDS M1 WINDOWS EMULATOR (RUNNING UNDER WINDOWS ME) WHICH I HAVE RECENTLY PURCHASED. THE PRINTOUT WAS SENT DIRECTLY TO MY HP LASERJET PRINTER. THE EMULATOR WORKED SPLENDIDLY AND THE VIRTUAL CASSETTE IS A REAL JOY TO USE.

WHO SAYS CHRISTMAS DOESN'T COME EARLY? I'VE JUST MANAGED TO WIN, (BUY, DEE KEEPS REMINDING ME!), ON EBAY, 17 80-MICROCOMPUTINGS FROM THE EARLY 1980'S. THEY CAME FROM AN EBAY SHOP CALLED '8-BIT HEAVEN'. IT SEEMS THEY QUITE OFTEN HAVE BITS OF OLD TANDY RELATED ITEMS FOR SALE SO, I'VE PUT A LINK TO THEM ON THE WEB-SITE.

I HAVEN'T HEARD FROM ANYONE YET WITH INFORMATION ON THE ACULAB FLOPPY TAPE. I LIVE IN HOPE. CAN ANYONE HELP? ANYTHING OF INTEREST WOULD BE MOST HELPFUL.



THAT'S ABOUT IT FOR NOW -

TAKE CARE

DUSTY.

AT THE
READY>
PROMPT



THERE ARE A NUMBER OF
OPTION WITHIN PRINT USING
WHICH ALWAYS SEEM TO GET
OVER LOOKED. FOR INSTANCE,
THE EXCLAMATION MARK. YOU
CAN TAKE TWO FULL CHRISTIAN
NAMES AND A SURNAME AND
PRINT THEM OUT AS TWO
INITIALS AND A SURNAME. I
KNOW IT CAN BE DONE WITH
LEFT\$, BUT THE EXAMPLE BELOW
IS MUCH EASIER TO CODE AND
JUST MORE FUN!.

```
10A$="DUSTY":B$="CLINT":C$="
MILLER"
20 PRINT USING "!";A$;B$;"
";
30 PRINT C$
TYPE RUN AND DC MILLER
IS PRINTED. (LEAVING
A$ AND B$ INTACT).
NATURALLY IT ALSO
```



WORKS WITH LPRINT SO IT'S
QUITE HANDY FOR LABEL AND
ENVELOPE PRINT RUNS.

FOR DISK BASIC (AND ACULAB
XBAS) HERE'S A TIP. APART
FROM THEIR APPLICATION IN
DIRECT ACCESS FILE
HANDLING LSET AND RSET CAN
BE USED TO LEFT OR RIGHT
JUSTIFY A STRING WITHIN
ITS EXISTING LENGTH. APART
FROM THEIR CONVENIENCE,
THESE FUNCTION RE-USE THE
EXISTING STRING STORAGE,
AND THEREFORE HELP TO
AVOID DELAYS CAUSED BY
GARBAGE COLLECTION.

EVER WONDERED IF YOU'RE IN
LEVEL II OR DISK BASIC?
THE QUICKEST WAY TO FIND
OUT WHICH IS TO PEEK
(16396). IF THE VALUE =
201 THEN IT'S LEVEL II.

---= 000 =---

THIS WAS ORIGINALLY INTENDED TO BE A 'NORMAL' SIZE
PROGRAM (HAVING BEEN INSPIRED BY THE NINTENDO 'DS'
ADVERTISEMENT FOR 'BRAIN-TRAINING') WITH ALL SORTS OF
BELLS AND WHISTLES, BUT I JUST COULDN'T RESIST THE URGE TO
MAKE IT A ONE-LINER!

IT LOSES A BIT OF FINESSE IN THE PROCESS, BUT AFTER ALL,
THAT'S WHAT A ONE-LINER IS ALL ABOUT!

JUST TYPE THE PROGRAM IN (THE LARGE AMOUNT OF SPACE IS
CREATED BY THE DOWN-ARROW, NOT THE SPACE BAR). TYPE IN
YOUR ANSWER AND PRESS ENTER.

IT EVEN HAS A BUILT-IN TIMER. KEEP TRYING, YOU WILL GET
QUICKER I PROMISE!

WHILE I WAS TYPING IN THESE BRIEF NOTES, I SUDDENLY REALISED THAT THE
PROGRAM, (MINUS THE TIMER AND THE RANDOM NUMBER BITS ETC.) COULD
EASILY BE USED AS A LEVEL 2 LINEINPUT COMMAND. CHECKING TO SEE IF THE
ENTER KEY IS PRESSED TO TERMINATE INPUT IS ACHIEVED BY PEEKING(14400)
AND WAITING FOR IT TO BE EQUAL TO 1. NEAT EH? I'LL PERHAPS EXPAND ON
THIS IN THE NEXT ISSUE.

```
10 CLS:A=RND(985)+15:B=1000-A:PRINT"SUBTRACT ";A;"FROM 1000";:FO
RX=@T01STEP0:C=C+1:PRINT@192,"TIME TAKEN ";C;:A$=INKEY$:B#=B#+A$
:IFPEEK(14400)=1THENPRINT"
```

```
YOU TYPED ";B#"ANSWER IS";B:INPUT"
ENTER TO GO AGAIN";Z#:RUNELSENEXTX
```

SOME THOUGHTS ON RADIO SHACK PRINTERS BY ROY T BECK

REPRODUCED (WITH PERMISSION) FROM TRSTIMES, VOL8 NO.6



EVERY SO OFTEN YOU WILL SEE ONE OF THE OLD BATTLESHIP-GREY R/S PRINTERS AT A SWAP MEET OR SALVAGE STORE, AND YOU WONDER WHAT KIND OF A BARGAIN IT MIGHT BE. HOW DO YOU KNOW WHAT ITS CHARACTERISTICS ARE? YOU COULD WRITE TO FT. WORTH FOR A MANUAL, BUT THAT'S A BUMMER, CONSIDERING THE COST AND DELAY.

I RECENTLY GOT TO THINKING ABOUT THE WIDE VARIETY OF PRINTERS AND PRINTER-LIKE DEVICES RADIO SHACK HAS PRODUCED OVER THE YEARS. I HAVE MOST OF THE CATALOGUES IN THE RSC SERIES, RUNNING FROM RSC-2 THROUGH RSC-22A (I AM MISSING RSC-1 AND RSC-13). THIS LIBRARY IS VERY USEFUL IN SEARCHING OUT DATA ABOUT VARIOUS R/S PRODUCTS. SINCE THIS COVERS THE PERIOD FROM 1978 TO 1991, (THE TRS ERA), I DECIDED TO TABULATE ALL OF THE PRINTERS BY THEIR CHARACTERISTICS.

AS YOU READ THE TABLE, YOU WILL NOTICE A NUMBER OF 'HOLES'. I AM SORRY ABOUT THESE, BUT THE CATALOGUE LISTING OF SOME OF THE MACHINES DOESN'T ALWAYS PROVIDE ALL THE EXPECTED INFORMATION. ALSO, I HAVE TO INSERT THE USUAL LEGAL ESCAPE CLAUSE. I'M NOT RESPONSIBLE FOR ANY ERRORS YOU MAY FIND IN THE ARTICLE. I HAVE DONE THE BEST I CAN, BUT I'M ONLY HUMAN AND I DO MAKE ERRORS. (R/S IS ALSO KNOWN TO MAKE OCCASIONAL ERRORS!).

YOU MAY NOT EVEN RECOGNISE SOME OF THESE PRINTERS, BUT, YES, RADIO SHACK DID PRODUCE ALL OF THEM. BEFORE TABULATING THEM, I WOULD LIKE

TO DESCRIBE THE TYPES OF PRINTERS R/S HAS PRODUCED. TAKING THEM IN ORDER, I WILL GIVE A THUMB-NAIL SKETCH OF EACH TYPE SO YOU WILL BE FAMILIAR WITH THEM. THESE ARE:

1. ELECTROSTATIC PRINTERS
THE ELECTROSTATIC TYPE IS (FORTUNATELY) AN OBSOLETE TYPE ORIGINALLY OFFERED IN THE MODEL 1 ERA. THE EARLIEST ONE WAS CALLED THE SCREEN PRINTER, AND IT WAS FOR THIS PRINTER THAT THE MODEL 1 HAD A 40 LINE BUS CONNECTION ON THE LEFT SIDE OF THE EXPANSION INTERFACE LABELLED 'SCREEN PRINTERS'. THIS IS WHERE YOU WOULD PLUG IN THE SCREEN PRINTER OR ANY OTHER BUS DEVICE YOU MIGHT OWN. WHEN YOU PUSHED A BUTTON ON THE PRINTER, THE IMAGE ON THE SCREEN OF THE COMPUTER AT THAT MOMENT WAS PRINTED. ACTUALLY, THE SCREEN PRINTER DESIGN WAS CLOSELY INTEGRATED WITH THE OPERATION OF THE COMPUTER. WHEN THE SCREEN PRINTER WAS ACTUATED, IT SEIZED CONTROL OF THE COMPUTER, HALTED THE Z-80 CPU, AND DID A DMA TRANSFER OF THE SCREEN MAGE BY SCANNING THE VIDEO ROM (AT 2200 CPS). WHILE THIS WAS A TECHNOLOGICAL TOUR DE FORCE IT ALSO MADE THE SCREEN PRINTER ESSENTIALLY INCOMPATIBLE WITH EVERYTHING THAT WAS NOT A MODEL 1, LEVEL 1 COMPUTER. THE SCREEN PRINTER USED AN ELECTRIC ARC TO BURN A THIN FILM OF ALUMINIUM OFF A PAPER SUBSTRATE, LEAVING BLACK LETTERS ON AN ALUMINIUM FOIL SURFACE OF A SHEET OF PAPER.

THE QUICK PRINTER (1) AND QUICK PRINTER 11 USED THE SAME PRINTING TECHNIQUE, BUT MUCH SLOWER BECAUSE IT DID NOT DO DMA. THE RESULTS OF ALL THREE PRINTERS WERE UNIFORMLY POOR. THE LETTER SIZE AND SHAPE WAS FIXED IN THE DESIGN OF EACH PRINTER, COULD NOT BE ALTERED, WAS VERY SMALL, AND PRODUCED A BAD SMELL IN THE PROCESS OF PRINTING. YES, THEY WORKED, BUT NOT WELL, AND WE ARE WELL RID OF THEM.

2. PEN PLOTTERS

R/S PRODUCED SEVERAL PEN PLOTTER DEVICES. MOST OF THEM USED A SMALL BALL POINT OR FELT TIP PEN TO SCRIBE LETTERS ONTO PAPER, WHICH WAS VERY LIMITED IN SIZE. THESE WERE REALLY INTENDED TO PRODUCE GRAPHIC IMAGES, BUT I AM INCLUDING THEM BECAUSE THEY COULD OPERATE AS PRINTERS WHEN DESIRED.

3. INK JET PRINTERS

R/S ALSO PRODUCED AN INK-JET PRINTER, THE CGP220 WHICH WAS REALLY A PLOTTER.

4. THERMAL PRINTERS

WERE OFFERED FOR THE PC-3 AND PC-4 PACKET COMPUTERS. THERMAL PRINTERS ARE QUIET, BUT SUFFER FROM THE NEED FOR SPECIAL PAPER, USUALLY RATHER NARROW, AND WORSE, THE IMAGE WILL FADE WITH TIME, ESPECIALLY WHEN EXPOSED TO SUNLIGHT. THE TP10 AND TRP-100 UNITS WERE INTENDED FOR USE WITH DESK TOP COMPUTERS. THE TRP-100 WAS ESPECIALLY CLEVER; IT COULD OPERATE ON BATTERIES OR AC POWER, AND COULD USE EITHER THERMAL PAPER OR A THERMAL RIBBON TO PLACE IMAGES ON PLAIN PAPER.

5. DAISY WHEEL PRINTERS

MANY DIFFERENT DAISY WHEEL PRINTERS WERE OFFERED AT VARIOUS TIMES. ALL BUT ONE OF THESE ARE IDENTIFIED WITH MODEL NAMES BEGINNING WITH DWP MEANING DAISY WHEEL PRINTER THE ODD ONE WAS NAMED DW-11, WHICH ALSO MEANT DAISY WHEEL. I AM NOT SURE IF THERE EVER WAS A DW-1 PRINTER; THE 11 ON DW-11 WOULD SEEM TO IMPLY THIS, BUT I HAVEN'T FOUND ANY SOLID EVIDENCE OF SUCH. POSSIBLY A DW-1 WAS PLANNED BUT NEVER GOT INTO PRODUCTION. BILL BARDEN, ANOTHER AUTHOR, INDICATES THE DW-1 EXISTED BUT I CAN'T FIND IT IN THE CATALOGUES I HAVE. SEE TABLE 5A. TABLE 5A LISTS THE WHEELS FOR SOME OF THE PRINTERS. THERE ARE INCONSISTENCIES IN THE CATALOGUES, ESPECIALLY REGARDING THE WHEELS FOR THE DW-11 AND THE DW-410; IF THE SAME WHEEL FITS BOTH, AS FOR EXAMPLE, THE PICA 10, THEN WHY SHOULD THERE BE DIFFERENT WHEELS FOR CERTAIN OTHER FONTS, AS FOR EXAMPLE COURIER 10? THIS DOESN'T MAKE GOOD SENSE, BUT IT IS WHAT I FOUND IN THE CATALOGUES.

6. IMPACT DOT MATRIX

R/S PRODUCED A GREAT MULTITUDE OF IMPACT DOT MATRIX MACHINES, NUMBERING AT LEAST 38 DIFFERENT MODELS. WOW! I SUSPECT THEY ORDERED EACH BATCH OF PRINTERS TO A SPECIFICATION, AND WHEN THAT BATCH WAS SOLD OUT AND MORE WERE NEEDED, A NEW SPECIFICATION WAS DEVELOPED. SEEMS LIKE A SILLY WAY TO OPERATE, BUT THE EVIDENCE IS IN THE CATALOGUES. SEE TABLE 6.

NAMING THESE PRINTERS WAS A PROBLEM. INITIALLY, THEY PRODUCED A DOT MATRIX MODEL CALLED SIMPLY THE LINE PRINTER. AFTER THIS ONE, THERE CAME A SERIES OF EIGHT MACHINES NAMED LP-I THROUGH LP-VIII. AFTER THESE, RADIO SHACK DECIDED TO USE DESCRIPTIVE LETTER PREFIXES, AND THE LETTERS DMP FOR DOT MATRIX PRINTER WERE USED FOR MOST OF THE LATER MACHINES. THERE WAS A PC-I PRINTER WHICH WAS A DOT MATRIX PRINTER FOR USE WITH THE ORIGINAL POCKET COMPUTER. THERE IS ALSO A MACHINE IDENTIFIED AS LMP-2150, WHICH IS ALSO A DOT MATRIX PRINTER. SOME PRINTERS MAY NOT HAVE EXISTED. CERTAIN R/S CATALOGUES REFER TO RIBBONS FOR PRINTERS WHICH APPARENTLY WERE NEVER IN THE CATALOGUES. EXAMPLES ARE THE DMP-133 AND DMP-300, WHICH ARE LISTED FOR REPLACEMENT RIBBONS, BUT WHICH WERE NOT THEMSELVES LISTED IN THE RSC CATALOGUES. I AM SURE THE DMP-300 WAS A TYPO, AND SHOULD HAVE BEEN DMP-302. I CAN'T ACCOUNT FOR THE DMP-133, PROBABLY ANOTHER TYPO WHEN THE CATALOGUES WERE PREPARED.

7. LASER PRINTERS
FINALLY, RS PRODUCED AT LEAST TWO LASER PRINTERS, UNDER THE DESCRIPTORS LP-950 AND LP-1000. EVIDENTLY LP IN THIS CASE MEANT LASER PRINTER, AS OPPOSED TO LP-ROMAN NUMERAL WHICH WAS THE ORIGINAL DOT MATRIX IMPACT SERIES. SEE TABLE 7. BOTH OF THESE PRINTED SIX PAGES PER MINUTE (PPM) AND HAD A RESOLUTION OF 300 DOTS PER INCH (DPI).

THERE YOU HAVE IT, SEVEN MAJOR TYPES OF MACHINES TOTALLING ABOUT 60 MACHINES ALL TOLD.

MISCELLANEOUS COMMENTS.
I HAVE INCLUDED THE RIBBON CATALOGUE NUMBERS FOR TWO REASONS; ONE IS I ALLOW YOU TO IDENTIFY SIMILAR PRINT MECHANISMS, AND THE OTHER FOR THE SAKE OF ASSISTING YOU TO ORDER THE CORRECT RIBBON FOR YOUR MACHINE. BASED UPON THE COMMONALITY OF RIBBONS AMONG THE DOT MATRIX MACHINES, IT IS REASONABLE I ASSUME THE CORRESPONDING MACHINES ARE BY THE SAME MANUFACTURER, WITH SIMILAR INTERNAL PARTS.
I HAVE ALSO INCLUDED MY AVAILABLE INFORMATION ON PRINT WHEELS FOR THE DAISY WHEEL MACHINES.

THE CATALOGUE PRICES ARE SHOWN FOR INFORMATION ONLY. KNOWING THE RELATIVE ORIGINAL PRICES OF THE VARIOUS MACHINES WILL GIVE YOU SOME INFORMATION ABOUT THE RELATIVE QUALITY OF PRINTERS YOU MAY SEE AT SWAP MEETS. USUALLY, R/S INTRODUCED ITS PRODUCTS AT SOME PRICE, AND THEN LATER REDUCED THE PRICE. IN A FEW CASES, THEY ACTUALLY RAISED PRINTER PRICES IN LATER CATALOGUES. THE TABLES ALSO SHOW WHICH CATALOGUES LISTED EACH PRINTER. TABLE 8 SHOWS THE DATE OF EACH RSC CATALOGUE. BY NOTING WHICH CATALOGUES LISTED A PARTICULAR PRINTER, AND THEN CHECKING TABLE 8, YOU CAN DETERMINE THE INITIAL AND FINAL OFFERING DATE OF EACH PRINTER, AND THUS CAN DETERMINE THE APPROXIMATE AGE OF ANY PARTICULAR MACHINE YOU MAY SEE AT A

SWAP MEET, ETC.
 WHERE POSSIBLE, I HAVE LISTED THE PRINT SPEED IN CHARACTERS PER SECOND (CPS) AND THE MAXIMUM PAPER WIDTH IN INCHES WHICH CAN BE ACCOMMODATED.

NOTE THAT TRACTOR FEED PAPER IS ABOUT ONE INCH WIDER THAN THE FINAL PRODUCT BECAUSE OF THE TEAR-OFF EDGES. SEVERAL OF THE PRINTERS USE NARROWER THAN 8.5 INCH PAPER. BEWARE OF THESE. THE STANDARD PAPER SIZES YOU MIGHT EXPECT TO SEE ARE 8.5 AND 9.5 INCH WIDE, WHERE THE EXTRA INCH REPRESENTS THE TEAR-OFF EDGE CONTAINING SPROCKET HOLES. SIMILARLY, 14.875 INCH PAPER IS AVAILABLE, WHICH HAS 14 INCHES OF USEABLE WIDTH, WHETHER THE EDGES TEAR OFF OR NOT. I HAVE ROUNDED THIS PAPER TO 15 INCHES IN THE TABLE. MOST OF THE WIDE CARRIAGE PRINTERS WILL WORK JUST FINE WITH 8.5 OR 9.5 INCH PAPER, SOME MUCH LESS, DOWN TO AS SMALL AS 4 INCHES. I HAVE LISTED THE MAXIMUM QUOTED CAPACITY OF EACH MACHINE.
 THE LINE PRINTER AND THE

TWO VERSIONS OF LP- 1 WERE UPPER CASE ONLY; AVOID THEM. AS YOU ALL KNOW, I AM SURE, R/S COMPUTERS ARE DESIGNED TO SEND ONLY A CARRIAGE RETURN (CR) TO THE PRINTER AT THE END OF EACH LINE. R/S PRINTERS ARE DESIGNED TO INTERPRET THIS COMMAND AS MEANING THE PRINTER SHOULD EXECUTE BOTH A CR AND A LINE FEED (LF) BUT OTHER COMPUTERS ARE DESIGNED TO SEND A SEPARATE CR AND LF UNDER THE SAME CIRCUMSTANCES. MOST R/S PRINTERS CAN BE SET UP TO RECOGNISE BOTH THESE CIRCUMSTANCES, BUT THERE IS NO CONSISTENT STANDARD FOR HOW YOU PROGRAM THEM TO DO THIS. SOME PRINTERS HAVE A DIP SWITCH TO ENABLE THE CR+LF RESPONSE, SOME WILL ACCEPT SOFTWARE COMMANDS, AND SOME WILL ACCEPT BOTH. I DO NOT HAVE ANY OVERALL DATA FOR THIS, I CAN ONLY COMMENT UPON THE SITUATION. SINCE YOU REALLY OUGHT TO HAVE THE MANUAL FOR WHATEVER PRINTER YOU HAVE, YOU CAN FIND THIS INFO FOR YOUR PRINTER IN YOUR MANUAL. R/S IS PRETTY GOOD ABOUT MAKING MANUALS AVAILABLE FOR OLD EQUIPMENT, SO DO ORDER ONE FROM THEM.

Table 1
 Electrostatic Printer

Model	Cat. No.	Speed CPS	Dots	Max Paper	Orig. Price \$	Listed in Cat RSC-	Paper No.
Quick Printer (I)	26-1153	100	7	4.75	499	2 to 3	26-1405
Quick Printer II	26-1155	64	7	2.375	219	3 to 5	26-1412
Screen Printer	26-1151	2200	7	4.75	599	1	26-1405

Table 2
 Pen Plotters

Model	Cat. No.	Max Paper	Orig. Price \$	Listed in Cat RSC-
CGP-115	26-1192	4.5	250 to 200	8 to 11
FP-215	26-1193	10	995	8 to 14
Multi-Pen Plotter	26-1191	8.5	1995	6 to 9
PC-2	26-3605	2.25	240	8
Plotter/Printer	26-1190	9	1460	4 to 7

**Table 3
Ink Jet Printers**

Model	Cat. No.	Speed CPS	Pins	Max Paper	Orig. Price \$	Listed in Cat RSC-	Ribbon No.
CGP-220	26-1268	37	7	8.5	699 to 599	10 to 16	26-1281 26-1282

**Table 4
Thermal Printers**

Model	Cat. No.	Speed CPS	Dots	Max Paper	Orig. Price \$	Listed in Cat RSC-	Paper No.
PC-3	26-3591	24	7	2.25	120	14	26-3592
PC-4	26-3652	20	7	1.5	80	9 to 14	26-????
PC-8	26-3591	24	7	2.25	120	19	26-3592
TP-10	26-1261	30	7	4	100	12 to 15	
TRP-100	26-1275	50	7	8.5	300	12 to 16	26-1297

**Table 5
Daisy Wheel Printers**

Model	Cat. No.	Speed Char/Sec	Max Paper	Orig. Price \$	Listed in Cat RSC-	Ribbon No.	
DW-II	26-1158	43	16"	1960 to 1995	4 to 11	26-1419 26-1449	
DW-IIB	26-	This printer is a slight upgrade of DW-II					
DWP-210	26-1257	18	13	799 to 599	10 to 14	26-1445 26-1458	
DWP-220	26-1278	20	16	599	15 to 16	26-1299	
DWP-230	26-2812	20	16	400 to 460	17 to 20A	26-1445 26-1458	
DWP-410	26-1250	25	16	1495 to 1295	8 to 11	26-1419 26-1449	
DWP-510	26-1270	43	16	1495	12 to 16	26-1419 26-1449	
DWP-520	26-2800	43	16	995	17 to 19	26-1445 26-1458	

**Table 5A
Wheels for Table 5**

Name of Wheel	DW-II	DWP-210	DWP-220	DWP-410
Courier 10	26-1420	26-1467	26-1230	26-1430
Prestige Elite 12	26-1421	26-1468		26-1431
Madeleine PS	26-1422			26-1432
Cubic PS	26-1425			26-1433
Title Italic 12	26-1426			26-1434
OCR B	26-1484			26-1435
Letter Gothic 12	26-1485		26-1231	26-1436
Cubic 15	26-1487			26-1438
Bold PS	26-1488			26-1439
Venezia PS		26-1469	26-1232	
Scientific A/N	26-1486			26-1486
Pica 10	26-1290			26-1290
Narrator	26-1291			26-1291
OCR-A	26-1292			26-1292
Elite 12	26-1293			26-1293

**Table 6
Impact Dot Matrix Printers**

Model	Cat. No.	Speed		Max Paper	Orig. Price \$	Listed in Cat RSC-	Ribbon No.
		CPS	Pins				
Line Printer	26-1150	60	7	9.8	1300	2	
LP-I	26-1152	60	7	12.1	1559	2 to 3	26-1413
LP-II	26-1154	100	7	9.5	970 to 799	3 to 5	26-1413
LP-III	26-1156	120	9	15	1960	3 to 4	26-1414
LP-IV	26-1159	50	9	9.5	999	4 to 5	26-1413
LP-V	26-1165	160	9	15	1860	5 to 7	26-1414
LP-VI	26-1166	100	7	15	1160	4 to 7	26-1418
LP-VII	26-1167	30	7	9.5	399	6 to 7	26-1424
LP-VIII	26-1168	100	9	9.5	799	6 to 7	26-1418
DMP-100	26-1253	50	7	9.5	399	8 to 10	26-1424
DMP-105	26-1276	80	9	9.5	200	12 to 17B	26-1288
DMP-106	26-2802	80	9	9.5	220	19 to 20A	26-1288
DMP-107	26-2821	100	9	10	280	22 to 22A	26-1235
							26-1236
DMP-110	26-1271	50	9	10	400	11 to 14	26-1283
DMP-120	26-1255	120	9	9.5	500	10 to 14	26-1483
DMP-130	26-1280	100	28	10	350	15 to 17B	26-1235
							26-1236
							26-1238
DMP-130A	26-1280A	120	28	10	360	19	26-1235
							26-1236
							26-1238
DMP-132	26-2814	120		10	380	20A	26-1235
							26-1236
							26-1238
DMP-134	26-2848	160	9	10	360	22 to 22A	26-1235
							26-1236
DMP-200	26-1254	120	9	9.5	799 to 699	8 to 11	26-1483
DMP-240	26-2839	192	24	10	550	22 to 22A	26-2824
							26-2826
DMP-302	26-2849	270	24	10	599	22 to 22A	26-2819
DMP-400	26-1251	140	9	15	1195	8 to 9	26-1418
DMP-420	26-1267	140	9	15	999	10 to 11	26-1418
DMP-430	26-1277	180	18	15	899 to 699	12 to 17B	26-1296
DMP-440	26-2808	300	9	15	699	19 to 20A	26-2809
							26-2827
DMP-442	26-2822	300	9	16	699	21A to 22A	26-2823
DMP-500	26-1252	220	9	15	1795 to 999	8 to 11	26-1482
DMP-2100	26-1256	160	24	15	1995	9 to 11	26-1442
DMP-2100P	26-1274	160	24	15	1995 to 1495	12 to 16	26-1442
DMP-2102	26-2817	270	24	16	999	21A	26-2819
DMP-2103	26-2850	270	24	16	899	22 to 22A	26-2819
DMP-2110	26-2810	240	24	15	1295	17 to 17B	26-1442
DMP-2120	26-2811	240	24	16.5	1599	19 to 21A	26-2834
							26-2835
							26-2836
DMP-2130	26-2845	480	28	16.5	1199	22 to 22A	26-2846
LMP-2150	26-1272	290	9	16	3995	12 to 14	26-1287
DMP-2200	26-1279	380		16	1695	15 to 17B	26-2825
PC-1	26-3505	16	7	1.75	150 to 128	6 to 7	26-3507

Table 7
Laser Printers

Model	Cat. No.	Speed PPM	DPI	Max Paper	Orig. Price \$	Listed in Cat RSC-
LP-950	26-2838	6	300	8.5	1599	22 to 22A
LP-1000	26-2804	6	300	8.5	2199 to 2599	19 to 21A

Table 8
RSC Catalogs

RSC-	Date	RSC-	Date	RSC-	Date	RSC-	Date
1	1978	8	1983	15	1986	19E	1988
2	1978	9	1983	16	1986	20	1989
3	1979	10	1984	17	1987	20A	1989
4	1981	11	1984	17B	1987	21	1990
5	1981	12	1985	18	1987	21A	1990
6	1982	13	1985	18E	1987	22	1991
7	1982	14	1985	19	1988	22A	1991

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AS THIS IS THE CHRISTMAS EDITION, I THOUGHT A FESTIVE PICTURE WOULD BE IN ORDER. I KNOW IT'S USUALLY SANTA SO JUST FOR A CHANGE, I THOUGHT THIS YEAR WE COULD HAVE AN 'XMAS COWBOY'!

I WANTED THE PROGRAM TO WORK WITH THE STANDARD LEVEL 2, MODEL 1 AND I WANTED TO STORE THE MINIMUM AMOUNT OF INFORMATION REQUIRED TO PRINT THE IMAGE. IT SEEMED TO ME THAT IT IS ONLY NECESSARY TO STORE THE START POSITION, LENGTH OF CHARACTERS REQUIRED AND THE 'END OF LINE' MARKER. THE DATA STATEMENTS AS SHOWN FROM LINE 200 ONWARDS CONTAIN JUST THAT! THE FIRST 3 ITEMS REPRESENT (1) START PRINTING AT POSITION 32 (FROM THE LEFT) (2) FOR 8 CHARACTERS AND (3) 0 MEANS THAT'S IT FOR THIS LINE. THE LAST DATA STATEMENT, '99', JUST ENABLES THE PROGRAM TO END DURING THE NORMAL READ ROUTINE.

I ALSO WANTED THE PRINTED CHARACTERS TO SAY, IN THIS



INSTANCE, MERRY XMAS AND NOT JUST BE A SELECTION OF RANDOM CHARACTERS. I'D FORGOTTEN MANY OF THE RESTRICTIONS THIS WOULD PLACE ON ME REGARDING STRING HANDLING. (THE LAST SYSTEM I WORKED ON WAS A MCDONNELL DOUGLAS RUNNING 'PICK' WHICH SUPPORTS 'DATABASIC'. THIS BASIC HAS EXCEPTIONAL STRING HANDLING CAPABILITIES, WHICH I HAD BECOME ACCUSTOMED TO). ANOTHER PROBLEM ENCOUNTERED, WHICH, AGAIN, I'D FORGOTTEN, WAS THAT MANY OF THE LEWIS ROSENFELDER'S SUPERB STRING HANDLING ROUTINES FROM BF&B REQUIRE DISK BASIC!

I ALSO CONSIDERED HAVE A SMALL MACHINE CODE ROUTINE TO FILL THE PRINTING STRING (LDIR IS MADE FOR SUCH EVENTS IF I REMEMBER CORRECTLY) BUT I DECIDED TO STICK TO POKEING 'COS I CAN'T REMEMBER (I'M EMBARRASSED TO ADMIT) HOW TO PASS THE NECESSARY VARIABLES TO A M/C PROGRAM!

SO, BRIEFLY, THIS IS HOW THE PROGRAM WORKS.

PROGRAM LINE 10 CLEARS A BIT OF STRING SPACE.
20 DECLARES THE FULL STRING, PART OF WHICH WILL BE PRINTED.
30 A SUBROUTINE WHICH INITIALISES THE PRINT LINE.
40 READS THE FIRST DATA ITEM (STARTING POSITION OF PRINTING).
50 CHECK TO SEE IF IT'S THE END OF A LINE.
60 READS THE NEXT DATA ITEM (LENGTH OF STRING TO PRINT).
70 INITIALISES A TEMPORARY

VARIABLE WHICH CONTAINS THE DATA TO BE POKED INTO THE PRINT LINE.

80 FIND, WHERE IN MEMORY THE PRINT LINE IS STORED.
90-110 POKE THE TEMPORARY STRING INTO THE PRINT LINE.
120 BACK TO LINE 40 TO READ THE NEXT DATA STATEMENT.
130 SUBROUTINE TO SEND THE PRINT LINE OFF TO THE PRINTER.
140 RE-INITIALISE THE PRINT LINE AFTER PRINTING.
150 READ THE NEXT DATA STATEMENT.
160 PROGRAM FINISHED IF IT'S = 99

THE XMAS COWBOY

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10 CLEAR500
20M$="MERRYXMASMERRYXMASMERRYXMASMERRYXMASMERRYXMASMERRYXMAS
MERRYXMAS"
30 GOSUB 180
40 READ S
50 IF S=0 GOSUB 130
60 READ L
70 TS=MID$(M$,S,L)
80 X=PEEK(VARPTR(P$)+1)+PEEK(VARPTR(P$)+2)*256
90 FOR Y=1TOL
100 POKE X+S+Y,ASC(MID$(T$,Y,1))
110 NEXT Y
120 GOTO 40
130 LPRINT P$
140 GOSUB180
150 READ S
160 IF S=99 THEN END
170 RETURN
180 P$=STRING$(63,32)
190 RETURN
200 DATA 32,8,0,26,18,0,25,22,0,24,3,28,20,0,23,3,27,22,0
210 DATA 22,3,27,22,0,22,2,26,24,0,21,2,25,26,0
220 DATA 11,7,20,3,25,26,57,3,0,6,45,56,5,0
230 DATA 3,48,55,3,59,3,0,2,19,24,28,54,7,0
240 DATA 1,3,5,19,27,31,59,2,0,1,2,4,23,31,30,0
250 DATA 1,2,4,27,35,24,0,1,32,51,7,0,2,2,5,34,44,11,0
260 DATA 3,2,6,47,0,4,2,7,44,0,5,3,9,39,49,1,0,7,35,49,2,0
270 DATA 10,31,49,2,0,16,25,48,2,0,18,2,21,2,24,21,47,3,0
280 DATA 18,2,24,16,43,2,47,2,0,19,4,25,18,46,3,0
290 DATA 21,2,25,19,46,2,0,19,4,26,15,45,3,0
300 DATA 17,6,26,15,45,2,0,16,2,20,4,26,11,43,5,0
310 DATA 15,2,20,4,26,11,42,6,0,15,3,21,4,26,21,0
320 DATA 16,3,27,15,43,3,0,17,23,42,3,0,18,20,41,3,0
330 DATA 30,3,34,3,41,2,0,31,3,40,2,0,32,4,38,3,0,34,5,0,99
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HERE'S A NEAT AND SMALL ONE-LINER FROM AN ORIGINAL IDEA FROM STEPHEN ROY HUGLI

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1 CLS:A=15360:B=16383:FORN=0T0512:POKEA+N,RND(63)+128:POKEB-N,RND(63)+128:NEXTN:RUN
```

YXMASMER
 ASMERRYXMASMERRYXM
 MASMERRYXMASMERRYXMASM
 XMA MERRYXMASMERRYXMASME
 YXM SMERRYXMASMERRYXMASMER
 RYX SMERRYXMASMERRYXMASMER
 RY ASMERRYXMASMERRYXMASMERR
 RR MASMERRYXMASMERRYXMASMERRY
 ERRYXMA ERR MASMERRYXMASMERRYXMASMERRY RRY
 XMASMERRYXMASMERRYXMASMERRYXMASMERRYXMASMERRY ERRYX
 RRYXMASMERRYXMASMERRYXMASMERRYXMASMERRYXMASMERRY MER YXM
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 MER YXMASMERRYXMASMERRY SMERRYXMASMERRYXMASMERRYXMASMER YX
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 MERR ASMERRYXMASMERR SME
 ASMERR ASMERRYXMASMERR SM
 MA ERRY ASMERRYXMAS MASME
 XM ERRY ASMERRYXMAS XMASME
 XMA RRYX ASMERRYXMASMERRYXMASM
 MAS SMERRYXMASMERRY MAS
 ASMERRYXMASMERRYXMASMER XMA
 SMERRYXMASMERRYXMASM YXM
 RRY MAS YX
 RYX RY
 YXMA ERR
 MASME



MERRY CHRISTMAS EVERYONE, AND A HAPPY NEW YEAR

WELL, THAT'S ABOUT IT FOR THIS ISSUE AND CLOSES OUR FIRST
 YEAR. THANKS TO ALL OF YOU WHO HAVE EMAILED ME. THE
 ENCOURAGEMENT WAS MUCH APPRECIATED, AND, OF COURSE, IT WAS
 JUST NICE TO HEAR FROM ANYONE WITH AN INTEREST IN TANDY'S.
 WITH ANY LUCK, THE NEXT ISSUE WILL HIT THE STREETS IN MARCH
 2008, SO THERE'S PLENTY OF TIME IF YOU WISH TO SEND IN AN
 ARTICLE, REQUEST FOR HELP, OR ANYTHING OF INTEREST TO THE
 TANDY 8-BIT WORLD. PLEASE EMAIL ME AT

DUSTYM@BEEB.NET

OH! BEFORE I FORGET, I CAME ACROSS A RADIO-SHACK SHOP IN
 LANCASTER THE OTHER WEEK. I THOUGHT THAT THEY HAD ALL CLOSED
 DOWN LONG AGO. DOES ANYONE KNOW OF ANYMORE OUT THERE?