

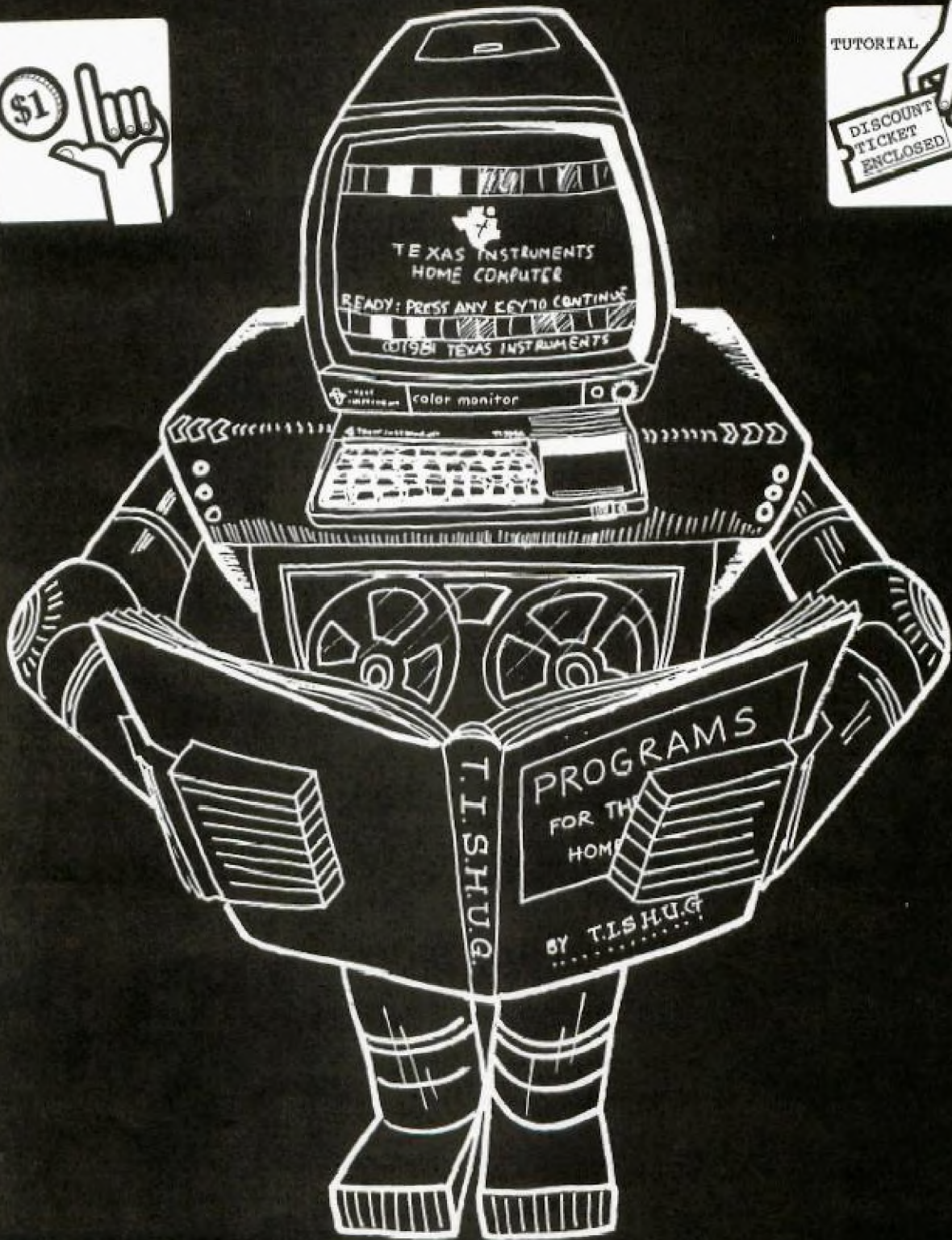
TISHUG
PO. Box 149,
PENNANT HILLS
NSW 2120

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SYDNEY NEWSDIGEST



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Sydney News Digest



The Texas Instruments Home-computer User's Group, known as TISHUG is a non profit, self supportive group of Texas Instruments computer owners and users. Information regarding membership and payment of dues should be directed to the Secretary, address below.

DISCLAIMER

The Sydney News Digest (SND) is the official newsletter of TISHUG, and whilst every effort is made to ensure the correctness and accuracy of information contained therein, be it of a general, technical, or programming, nature, no responsibility can be accepted by TISHUG as a result of the applying of such information.

THE NEWS DIGEST -

The SND is published eleven times per year (no January edition), by voluntry staff, from material provided by group members, other user-groups and other related sources.

Contributions and all correspondence (other than membership) should be addressed to the EDITOR, LIBRARIAN, ADVERTISING, etc., and submitted at the group meetings or posted to the appropriate person at the general address, below.

Copy for publication may be typed, hand printed, or be on tape or diskette media as files suitable for use with TI-WRITER (ie, DIS/FIX 80 or DIS/VAR 80). Please include sufficient information to enable the files to be read - filename, etc. Persons wishing to contribute on a regular basis should contact the editor who will make available a suitable public domain word processor program. The copy deadline for an issue is the first Saturday of the month (ie, meeting date) prior to the month of publication.

Any material, written or electronic, submitted to SND or Library Service is to be considered TISHUG property and to be used at the committee's discretion.

SOFTWARE LIBRARY SERVICE

TISHUG operates a Public Domain Software Library, containing programs written by TISHUG members and from other user groups as well as miscellaneous public domain sources. These programs are made available to members in two ways:-

- 1> by monthly issue - a selection of programs is made available at general meetings for a production/media cost fee. (See TISHUG SHOP column elsewhere for details of releases).
- 2> as a reward for members contribution to the activities of TISHUG by
 - (a) submission of an original program (own work) members recieve three programs of their choice, and,
 - (b) submission to SND, or other activity as the committee may otherwise determine, programs of the contributor's choice will be made available.

As the Library is maintained on a voluntry basis, no individaul requests for software (other than for the above reasons) can be honoured at the present time.

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COURTESY TO YOUR FELLOW TISHUGERS

When you strike a programing problem, require information, or just want to chat (modem or otherwise) please look at the clock before you pick up the 'phone! And always ask if it is a convenient time for your call.

IMPORTANT TISHUG ADDRESSES:-

General address
(for all letters
except membership)

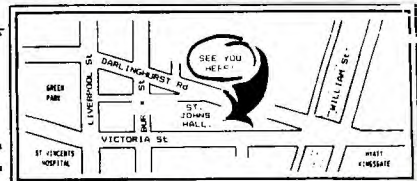
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Membership address

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PENNANT HILLS,
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Monthly Meetings
first Saturday
of the month

St. John's Hall,
Victoria Street,
DARLINGHURST.



The Communicators

This page will have to second as my EDITORIAL, as I have just run out of pages for this issue. I hope that you like what we have put together for you.

GREAT NEWS ABOUT THE NEXT CLUB MEETING...Once again, it is that time of the year, when we conduct yet another FULL DAY TUTORIAL/WORKSHOP.

However, we are going to be doing some things a little different this time.

Firstly, you won't have to cart all of your computer gear to this one, infact, all you will need to bring are the following items only...

(1) YOUR MEMBERSHIP CARD.

Only club members are permitted to attend these tutorials, as a treat for just having you in this club. Since many families have only one card, make sure that some one in your family remembers to bring the card with you.

(2) PEN'S AND NOTE PADS.

We can't expect you to remember all of the day's activities.

(3) YOUR ENTRY FEE/TICKET.

Entry to this full day Tutorial will only cost each person, \$2.50. Unless you have one of the enclosed tickets which will entitle the bearer to a .50c reduction on entry. Those tickets will have a number printed on them, for lucky DOOR PRIZES.

(4) YOUR LUNCH.

We will provide the drinks, the hall, the tutors, the classes, and a 32 PAGE BOOK, valued at \$10 Retail (and infact will be sold at that price later on for those who can't get to this fun day of learning.

THIS BOOK...

This book includes 16 programs, 10 lessons on programing, A colour-in for the kids, plus Technical information. It features such items as BIT MAP MODE and ASSEMBLY PROGRAM, SPELLING TUTOR with TE2, PSEUDO MEMORY EXPANSION, and much much more. Each person will receive one of these books when you enter the hall, plus a name tag, so you can better get to know each other.

THE PLACE AND TIME...

St. Johns Church HALL, VICTORIA STREET, DARLINGHURST (see map on the inside front cover). The time...9:30am on the dot, through to 5pm.

SOME OF THE TUTORS WILL INCLUDE: PETER DAY (Basic), MARK NIELSEN (Files in programs), ROSS HARDY (Flow charting/program design and System Analysis) RUSSELL WELHAM (Music), plus classes on EXTEND-ED BASIC, ASSEMBLER, and more.

Each class or workshop will be repeated after lunch break at 12 noon, and some of the classes may be repeated more than one, depending on the subject matter and involvement. We are will have our new TECHNICAL TEAM there in the connecting smaller hall to give you advice on expansion of your gear, and a questionnaire will be made available for you to fill out, so they know what your future needs may be. We will have some other treats for you as well.

Only 250 people will be able to attend this activity, so we ask you to be early to ensure that you're able to attend this FULL DAY TUTORIAL

And now to the COMMUNICATORS.

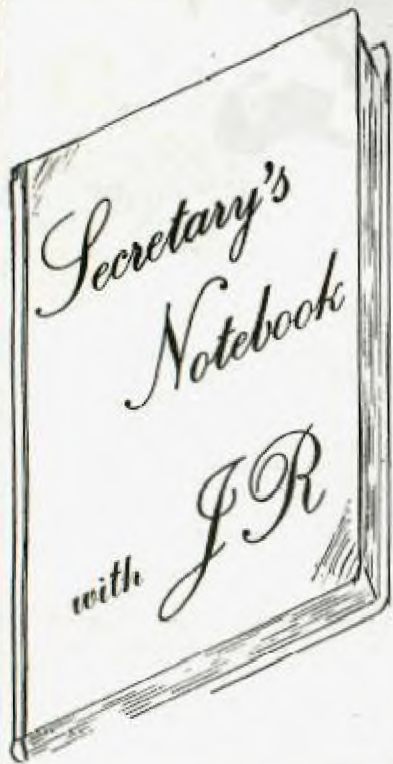
The deadline for entries to be submitted for our very own BBS program closes on the 1st of June, and your last chance to win both the \$100 cash prize and any 8 programs of your choice from the Software Library. Hopefully, by the time this publication gets to you, we will have had the new telephone line installed, and by mid to late June, our BBS will be ready to go. News of this will be shared with you in the July issue on this SND.

PERTH GROUP (TI.UP) has already got their BBS underway, and if you would like to phone it, the number is (09) 2718642 any Sunday from 12 noon to 12 mid-night.

To activate their system, firstly type <CTRL> A to start it. At present, I believe, that you are unable to down-load any software, but you can leave messages and read their News etc.

We hope to be able to do that, plus down-load programs. With the Perth TI BBS called "THE FOUNTAIN" you will be give a 15 minute time limit. With ours, it is hoped that you can stay on and read & place Electronic Mail, read and add News, then down-load one program per call. You can phone the system as many times as you like, but we have to make the above provisal, so that hungry members don't clog the line, when others may also wish to get on the system. For the first couple of months, we will probably run the system a few days a week. We'll tell you more about that next month also.

BI BI 4 NOW,
TEXPAC/SYSOP (SHANE)
881 on MiCC.



Hi there ..We must first of all thank Michael Ford for donating the cost of printing the Third Birthday cover in colour last month. I am sure you will all agree that the previous newsletter was our best to date.

The automatic answering service has now been installed at my home and I look forward to hearing from you during the day when my phone won't be as busy as it is in the evening. I am blessed with three teenagers who seem to spend an interminable amount of time on the phone, which only adds to the congestion! I will be able to listen to your messages remotely and I am sure this new facility will be of great benefit to our growing membership.

I have received some queries regarding the expiry dates shown on club membership cards. The confusion seems to centre around the fact that newsletters are mailed in the month before the month printed on the newsletter. If you joined in April the first newsletter you received would have been the MAY issue, which was mailed during the last week of April. Your membership card is valid a full 12 months and expires the end of March 1985. Still confused? Don't worry I can assure you we won't short change you.

Other problems in the administration of the membership is with renewals. In theory if you renew late you should be regarded as a



new member and be charged the joining fee. Such a policy is rather harsh so your committee has decided to levy a \$2.00 late payment fee thereby providing some incentive to pay on time. Prompt payment of membership dues keeps the workload to a minimum.



The Ryde Educational Computer Fair was held on April 13th and 14th. As usual Colin Waite of Texas Instruments Australia kindly loaned us a Computer and Computerwave Pty. Ltd. a colour monitor, TI LOGO 2, PLATO, and a demonstration cartridge. Don Dennis of IMAGIC provided copies of the company's latest cartridge software MICROSURGEON and DEMON ATTACK.



Special thanks to Terry Phillips and Chris Ryan for their help in manning the stand. We didn't see very many of our members at the TISHUG stand but there were some, including David and Elly Wignell who showed up while our cameraman was there. From the other photographs you can



See we had several young people visit the TISHUG stand.



Before we allowed them to play a game they each had to pass an individual test set by PLATO, who tested either their reading or mathematical skills. The NAVARONE Cartridge expander came in handy here enabling us to switch from one cartridge to the other without any hassles.



The show was well attended but the only other User Group there was MICROBEE. Since it was an Educational fair the various companies holding school contracts were well represented. It is a great pity TI did not crack the mass

MORE of J.R.

school market. They do however seem to have had more success in schools for handicapped children. TI's expertise with Speech Synthesis will no doubt have helped. One of our newest members is Ted Harvey, a teacher at Newcastle Technical College. The unit where Ted works has a classroom fitted out with TI equipment and it is being used by the Visually impaired, the deaf, the Physically and Mentally Disabled. A lot of interest was shown in the 64k printer buffer which had been loaned to us by COMPUTERWAVE. This piece of equipment is extremely useful when printing files created with TI-WRITER. Cursor control returned instantaneously even when some very long files were loaded.

Do you know what a GROM BUSTER is? No its not a modern day gangster set up to guard an illegal establishment but a rather clever device being manufactured by NAVARONE INDUSTRIES. This little box plugs into the I/O port of the console. A simple push of the button will transfer control to any third party cartridge. The device intercepts the computer's internal operating system, and allows owners of TI 99/4A consoles, which have been fitted with the Version 2.2 operating system to run ROM or EPROM based cartridges manufactured by third parties not licensed by TI. These manufacturer's include ATARI, FUNWARE, NAVARONE, ROMOX, and others using EPROM based cartridges. Chris Ryan has purchased NAVARONE'S DISK-FIXER module. I am looking forward to reading his review on this as I have been losing data on some of my disk's recently. That reminds me data loss problems can often be traced to cigarette smoke. As I am a non smoker this isn't my problem but I know of one company that had been experiencing a tremendous amount of trouble with information disappearing from disks. The problem completely disappeared overnight after smoking had been banned in their offices. The microscopic particles in cigarette and cigar smoke descend on the surface of the disk where the READ/WRITE heads are located, destroying the valuable data. Another source of data loss can be paper clips which are dispensed in one of those containers with a magnetic rim. If one of those clip fall on to your disk then it is goodbye to your data. I can verify this fact from painful experience.

We had a very well attended May General Meeting- 280 people sat around in a circle with Shane Andersen and his robots providing the entertainment. After the meeting the soldering iron wizards of the club met and have now formed a Technical sub-committee. Details are given elsewhere in this newsletter. Apparently some of members think we should change our club logo. If you agree let us know. Some interesting designs have been created by Thang Nguyen. They are shown alongside this column.



My little problem on prime numbers has created quite a bit of interest. The fastest solution so far received has been written by Joshua Velling. In his program using console BASIC the first 100 prime numbers are displayed in less than 2 minutes. The slowest solution has been received from John Chambers. His program takes about 36 minutes to run in Extended Basic. The author of the most efficient program will be announced next month.

Your Committee will be judging the entries received for the April monthly competition. The top three will be demonstrated at the June meeting and members attending will vote with their applause.

This month I would like to receive routines for protecting a program with a password.

I am still having far too many Newsletters returned by Australia Post. The club is charged additional postage fees for this service therefore I appeal to you all, to let us know at least two months in advance of the time you change an address. We print address labels two months ahead, hence the long lead time for corrections.

For those members with modems you can contact the Secretary of the club on the The

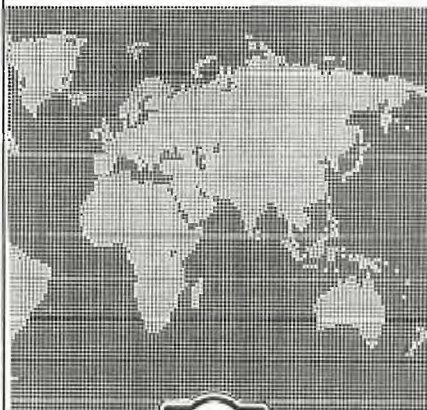
Australian Beginning by typing in "TISHUG" when the prompt asks for the username.

Running out of memory....

Happy Computing,

John Robinson

John Robinson.
Hon. Secretary.



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NANBRANA PTY. LTD;
38 GLOUCESTER AVENUE,
WEST PYMBLE
N.S.W. 2073

Send cheque or Postal Order stating covers required. (If not listed above, give name of equipment or dimensions to ensure fit).



Extended

TUTOR



with
Tony
McGovern.

We welcome our new columnist to the Sydney NEWSDIGEST. This will be a continuing feature set of articles, to ensure that you get the best out of your Extended Basic. Tony is a member of the Newcastle group, and we understand he has been a great source of inspiration to our friends in that group. So, here he is, from the FUNNELWEB FARM (049) 52 3162

In this series of notes on TI Extended Basic for the TI-99/4a we will concentrate on those features which have not received due attention in User-group newsletters or commercial magazines. In fact most of the programs published in these sources make little use of that most powerful feature of XB, the user defined sub-program, or of some other features of XB. Worse still is to find commercially available game programs which are object lessons in how to write tangled and obscure code. The trigger for this set of tutorial notes was a totally erroneous comment in the TI.S.H.U.G Newsdigest in Jun 1983. Some of the books I have seen on TI Basic don't even treat that simpler language correctly, and I don't know of any systematic attempts to treat XB. The best helper is TI's Extended Basic Tutorial tape or disk. The programs in this collection are unprotected and so open for inspection and it's worth looking at their listings to see an example of how sub-programs can give an easily understood overall structure to a program.

Well, what are we going to talk about then? Intentions at the moment are to look at

- (1) User-defined sub-programs
- (2) Prescan switch commands
- (3) Coding for faster running
- (4) Bugs in Extended Basic
- (5) Crunching program length
- (6) XB and the Peripheral Box
- (7) Linking in Assembler routines

Initially the discussion will be restricted to things which can be done with the console

and XB only. Actually, for most game programming the presence of the memory expansion doesn't speed up XB all that much as speed still seems to be limited by the built-in sub-programs (CALL COINC, etc) which are executed from GROM through the GPL interpreter. The real virtue of the expansion system for game programming, apart from allowing longer programs, is that GPL can be shoved aside for machine code routines in the speed critical parts of the game, which are usually only a very small part of the code for a game. Even so careful attention to XB programming can often provide the necessary speed. As an example, the speed of the puck in TEX-BOUNCE is a factor of 10 faster in the finally released version than it was in the first pass at coding the game.

Other topics will depend mainly on suggestions from the people following this tutorial series. Otherwise it will be whatever catches our fancy here at Funnelweb Farm.

(1) II. SUB-PROGRAMS in OVERVIEW

Every dialect of Basic, TI Extended Basic being no exception, allows the use of subroutines. Each of these is a section of code with the end marked by a RETURN statement, which is entered at some earlier point by a GOSUB statement somewhere else in the program. When RETURN is reached control passes back to the statement following the GOSUB. As an example

```
290 ....
300 GOSUB 2000
310 .....
.
.
2000 CALL KEY(Q,X,Y):: IF Y=1
THEN RETURN ELSE 2000
```

This simple example waits for and returns the ASCII code for a fresh keystroke, and might be called from a number places in the program. Very useful, but there are problems. If the line number of the subroutine is changed, other than by RESequencing of the whole program (and many dialects of Basic for microcomputers aren't even that helpful) then the GOSUBs will go astray. Another trouble, which you usually find when you resume work on a program after a lapse of time, is that the statement GOSUB 2000 doesn't carry the slightest clue as to what is at 2000 unless you go and look there or use REM statements. Even more confusingly the 2000 will usually change on RESequencing, hiding even that

aid to memory. There is an even more subtle problem -- you don't really care what the variable "Y" in the subroutine was called as it was only a passing detail in the subroutine. However, if "Y" is used as a variable anywhere else in the program its value will be affected. The internal workings of the subroutine are not separated from the rest of the program, but XB does provide four ways of isolating parts of a program.

- (1) Built-in sub-programs
- (2) DEF of functions
- (3) CALL LINK to machine code routines
- (4) User defined BASIC sub-programs

The first of these, built-in sub-programs, are already well known from console Basic. The important thing is that they have recognizable names in CALL statements, and that information passes to and from the sub-programs through a well defined list of parameters and return variables. No obscure Peeks and Pokes are needed. The price paid for the power and expressiveness of TI Basic and XB is the slowness of the GROM/GPL implementation.

DEF function is a primitive form of user defined sub-program found in almost all BASICs. Often its use is restricted to a special set of variable names, FNA,FNB,... but TI Basic allows complete freedom in naming DEFed functions (as long as they don't clash with variable names). The "dummy" variable "X" is used as in a mathematical function, not as an array index

```
100 DEF CUBE(X)=X*X*X
```

(2) doesn't clash with or affect a variable of the same name "X" elsewhere in the program. "CUBE" can't then be a variable whose value is assigned by a LET (or =), but "X" may be. Though DEF does help program clarity it executes very slowly in TI Basic, and more slowly than user defined sub-program CALLs in XB.

CALL LINK to machine code routines goes under various names in other dialects of Basic if it is provided (eg USR() in some). It is only available in XB when the memory expansion is attached, as the TI-99/4a console has only 256 bytes of CPU RAM for the TMS9900 lurking in there. We will take up this topic later.





You should have your TI Extended Basic Manual handy and look through the section on SUB-programs. The discussion given is essentially correct but far too brief, and leaves too many things unsaid. From experiment and experience I have found that things work just the way one would reasonably expect them to do (this is not always so in other parts of XB). The main thing is to get into the right frame of mind for your expectations. This process is helped by figuring out, in general terms at least, just how the computer does what it does. Unfortunately most TI-99/4a manuals avoid explanations in depth presumably in the spirit of "Home Computing". TI's approach can fall short of the mark, so we are now going to try to do what TI chickened out of.

The user defined sub-program feature of XB allows you to write your own sub-programs in Basic which may be CALLED up from the main program by name in the same way that the built-in ones are. Unlike the routines accessed by GOSUBS the internal workings of a sub-program do not affect the main program except as allowed by the parameter list attached to the sub-program CALL. Unlike the built-in sub-programs which pass information in only one direction, either in or out for each parameter in the list, a user sub-program may use any one variable in the list to pass information in either direction. These sub-programs provide the programming concept known as "procedures" in other computer languages, for instance Pascal, Logo, Fortran. The lack of proper "procedures" has always been one of the major limitations of BASIC as a computer language. TI XB is one of the BASICs that does provide this facility. Not all BASICs, even those of very recent vintage are so civilised. For example the magazine Australian Personal Computer in its last issue (Mar 84) carried a review of the IBM PCjr computer just released in the US of A. The Cartridge Basic for this machine apparently does not support procedures. Perhaps IBM don't really want or expect anyone to program their own machine seriously in Basic. You will find that with true sub-programs available, that you can't even conceive any more of how one could bear writing substantial

programs without them (even within the 14 Kbyte limit of the unexpanded TI-99/4a let alone on a machine with more memory).

The details of how procedures or sub-programs work vary from one language to another. The common feature is that the variables within a procedure are localised within that procedure. How they communicate with the rest of the program, and what happens to them when the sub-program has run its course varies from language to language. XB goes its own well defined way, but is not at all flexible in how it does it.

(3)

Now let's look at how Extended Basic handles sub-programs. The RUNNING of any XB program goes in two steps. The first is the prescan, that interval of time after you type RUN and press ENTER, and before anything happens. During this time the XB interpreter scans through the program, checking a few things for correctness that it couldn't possibly check as the lines were entered one by one, such as there being a NEXT for each FOR. The TI BASICs do only the most rudimentary syntax checking as each line is entered, and leave detailed checking until each line is executed. This is not the best way to do things but we are stuck with it and it does have one use. At the same time XB extracts the names of all variables, sets aside space for them, and sets up the procedure by which it associates variable names with storage locations during the running of a program. Just how XB does this is not immediately clear, but it must involve a search through the variable names every time one is encountered, and appears to trade off speed for economy of storage.

XB also builds a table of the built-in sub-programs that are called. How can it tell the difference between a sub-program name and a variable name? That's easy since sub-program names are always preceded by CALL. This is why sub-program names are not reserved words and can also be used as variable names. This process means that the very slow search through the GROM name tables is only done at prescan, and Basic then has its own list for each program of where to go in GROM for the GPL routine without having to conduct the GROM search every time it encounters a sub-program name while executing a program. In Command Mode the computer has no way provided to find user defined sub-program names in

an XB program in memory even in BREAK status. XB also establishes the process for looking up the DATA and IMAGE statements in the program.

Well then, what does XB do with user sub-programs? First of all XB locates the sub-program names that aren't built into the language. It can do this by finding each the name after a CALL or SUB statement, and then looking it up in the internal GROM files of built-in sub-program names. You can run a quick check on this process by entering the one line program

```
100 CALL NOTHING
```

TI Basic will go out of its tiny 26K brain and halt the prescan with a BAD NAME IN 100 error message, while XB, being somewhat smarter, will complete the prescan but halt execution with a SUBPROGRAM NOT FOUND IN 100 message.

The next thing that XB has to do in its prescan is to locate the sub-programs and take care of them. The XB manual insists that the sub-programs come at the end, with nothing but sub-programs after the first SUB statement (apart from REMarks which are ignored anyway). XB then scans and establishes new variable storage areas, starting with the variable names in the SUB xxx(parameter list), for each sub-program from SUB to SUBEND, as if it were a separate program. It seems that XB keeps only a single master list for built-in and user sub-programs. Data statements are also thrown into the common data pool. Try the following little program to convince yourself.



**More
next
month**

Younger Set



Dear Jenny,
My name is Sukhjit Kondel
and I am 14.

I have enclosed a Program
that I found and is called
"Kaleidoscope". Hope you
like it!

Yours Sincerely,
S. Kondel,
East Ham, LONDON.

```
100 REM
110 REM KALEIDOSCOPE
120 REM TI BASIC
130 CALL CLEAR
140 CALL SCREEN(15)
150 FOR J=32 TO 152 STEP 8
160 CALL CHAR(J,"FFFFFFFFF
FFFF")
170 CALL COLOR((J/8)-3,INT(R
ND*16+1),1)
180 CALL HCHAR(INT(RND*24+1)
,INT(RND*29+3),J)
190 NEXT J
200 GOTO 150
```



Well, hi there gang! This page
is set aside for you under 18
year old members of TI.S.H.U.G

Would you believe, I only
received one letter this
month, and I'll share that
with you in a moment. What are
you doing with your computers;
just playing games, I hope
not, infact, Shane tells me
that there are a lot of
talented Younger Set members
in this group. Let's see how
talented you are. Do you have
LOGO? if so, how about sharing
with us, some procederes.
Here is one you might like to
type in...

```
CLEAR
MAKE "X[6 7 8 9 10 11 12 13
14]
```

```
TELL 6 SXY 0 32
TELL 7 SXY 16 32
TELL 8 SXY 32 32
TELL 9 SXY 0 16
TELL 10 SXY 16 16
TELL 11 SXY 32 16
TELL 12 SXY 0 1
TELL 13 SXY 16 1
TELL 14 SXY 32 1
TELL :X EACH [CARRY YN ]
SS 5 SC 1
END
```

```
TO CLEAR
NOTURTLE CS CB 7 THAW
TELL :ALL SS 0 SC 0 SH 0
SXY 0 97 CARRY 0
END
```

Now the first one to type
that in, and correctly tell me
what it does, and include one
with your reply, will receive
a \$30.00 voucher to go buy
yourself a module of your
choice, at a selected Computer
Retail Outlet.

Here's a letter from Justin
Chambers of Denistone...

Dear Jenny, here is some of
my scores for the HALL OF
FAME(I hope).
PARSEC....113300 AND 100600
CHISHOLM TRAIL.6000, 5800
BLASTO....33640
ALPNER...30085
MUNCHER...11600,10900,9100,9200
CATERPILLAR.155,195,160

Well Justin, you didn't
make it with PARSEC, the high
score recorded by C.Sheehan
was 3870000. Antony Lewis
scored 47400 on Chisholm
Trail, and S.Hunt racked up
63171 for Alpner. But you
have gone into our Hall of
Fame with your scores on
BLASTO, MUNCHER AND
CATERPILLAR. Congratulations.
Keep those High scores coming,
but don't forget to do some
programming. You forgot to
mention your age.

Best wishes, JENNY.



New Computer Language Created by U of T Group

An intensive 12-month software
development effort at the University
of Toronto has produced a new
programming language called
Turing, which is being used by
3,000 students. The language is
simpler than BASIC and more
powerful than PASCAL.

Professors K.C. Holt, J.K. Cordy
and J.N.P. Hume teamed up to
create the language with support-
ing computer software and
documentation. Working at U of
T's Computer Systems Research
Group, they created compilers for
both the IBM 3033 and Digital
Equipment Vax.

Named after Alan Turing, who
helped build secret British com-
puters used after World War II to
crack Nazi communication codes,
the language is designed to speed
the development of highly reliable
and efficient software. Since
software development is the key to
profitability in microelectronics,
the language should help assure
success in Canadian high technol-
ogy companies.

For the beginning programmer,
Turing has a no frills syntax that is
easy to learn and convenient to
use. This means that Turing can
replace BASIC which is now being
used for teaching computer literacy
to children.

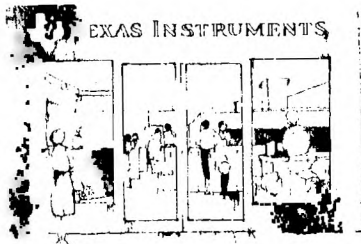
It is a general purpose program-
ming language, with wide applica-
tion, from children's microproces-
sors to industrial supercomputers,
and provides many constructs,
such as string handling and mod-
ules, that are missing from PAS-
CAL. It supports both interactive
programming and file processing.

Using the principle of early error
detection, the language helps the
computer to automatically find
bugs. With other languages, such
as Fortran, omitting a single com-
ma in a program has produced re-
sults as extreme as the loss of a
rocket space probe. The language
is defined in terms of mathematical
axioms, so Turing programs can be
proved to meet their specification;
this provides an extremely high
level of reliability.

A textbook explaining the new
language should be available early
this year.



Sydney News Digest



- ★ We were the FIRST with the 99/4A and we still have the largest range of both TI SOFTWARE & HARDWARE, at our CITY CENTRE
- ★ PLUS: check out our range of... 3rd Party Software, like ASTEROID MISSION CHOPPER ATTACK, TOAD, & FUTURA SOFTWARE HARDWARE: like MODEMS, PRINTERS, MONITORS in color, green & amber.
- ★ Our friendly staff are ready to assist you, with all your home computer needs.



ASK ABOUT THE NEW LOCAL PRODUCT CALLED...

"The Rainbow Pyramid"

by John Ashmore

This Extended Basic cassette game is both colourful, and a real challenge. Priced at only \$15.00, it's good value for your 15 dollar coins.

check out our other Cassette third party software

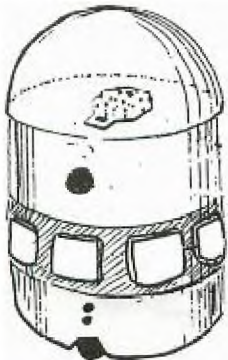
COMPUTER WAVE

325 GEORGE STREET
SYDNEY
(between Wynyard Station
and Martin Place)
Tel. 29 1631

And have we got some specials for you...some of our TI Software is discounted from 10% to 20% on selected items. COMING SOON: New titles of TI modules, like, MICROSURGEN and SUPER DEMON ATTACK by IMAGIC, and many more.

"FROGGOID", "TI-COUNT" and "THE ULTIMATE" (Disk Cataloger).

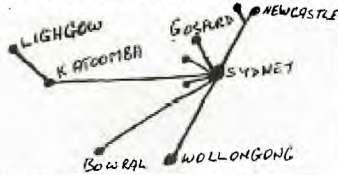
We have just received the ALL NEW "SciSys Parallel WORDSTORE" (64K printer buffer) for only \$299.00.



HAVE YOU SEEN OUR ROBOTS? Yes, Robots...come in and say hello to RB5X the programmable Robot.

MINI-FORTH is also now available, at Computer Wave for only \$30.00. This version is for those who only have an unexpanded TI-99/4(A) console, cassette recorder, and a MINI MEMORY MODULE. It is a local product with plenty of get-up and go. Featuring over 140 commands, full screen editing, plus a Forth Education section, and much more.

REGIONAL NEWS



BLAXLAND REGIONAL NEWS

The second meeting of the Blaxland Regional Group took place on April 3rd, at 28 Haymet St, Blaxland. Ten members attended (two other forgot) including one who joined TISHUG after attending our first meeting.

We considered amalgamating with the Penrith Regional Group of Malcolm Tudor's but the consensus was that a small informed gathering at a member's house was preferable and more convenient (for those further up the Mountains) than a larger gathering at Penrith Police Boys Club.

The meeting did welcome the formation of the Penrith group and anticipates a frequent exchange of information, programs and personnel. Ian Docherty and I attended the next meeting of the Penrith group and conveyed our decision to the meeting.

The group has also decided to change the time for the monthly meeting (after magazine) to the SECOND TUESDAY of EACH MONTH at 7.30 P.M. at the above address until further notice.

We have changed from the first Tuesday in order to send a member to the Sydney meeting to report on developments and collect club software on consignment. Ian Docherty (047-352078) and myself will probably alternate in our attendance at the Sydney meeting.

The members, most of whom have Extended Basic and some of whom have considerable expertise in either programming or electronics, are eager to buy club software.

At the conclusion of the meeting we travelled in convoy to Chris Old's house and spent an hour or so watching and using his comprehensive range of Texas and TISHUG software and listening to the speech synthesizer in action.

Overall it was a very successful and enjoyable meeting with many members calling for twice monthly meetings.

I would welcome any feedback from the club as to the future activities or any other matters you would like us to consider. Sorry this is such a long report.
Yours Sincerely
Robert Vines.

Dear Shane, I would like to introduce myself to you. I am one of the founders of the MAITLAND TI CLUB. (REGIONAL).

Maitland has a population of 43,000 people and is in the heart of the Hunter Valley. At our foundation meeting, we had 40 people. I believe there are at least 700 TI computers in Maitland. We have already started to run classes on TI BASIC, and members are getting into the true spirit of the club, as portrayed in your Sydney Newsdigest. While I am on this subject, I would like to congratulate you and your team, on a great publication.

I was reading in the Newsdigest with interest, of a parcel of magazines tapes and articles that you could send to clubs on consignment.

Could you please send a parcel for distribution at a club meeting.

Once again congratulations on your magazine, and we are promoting heavily, membership of the Sydney TI.S.H.U.G.

YOURS FAITHFULLY,

David Gunstone.
Founder Member.

Dear David,
Thank you for your kind words of support, it's so nice to hear from our members out of the city area, and I wish your group all the very best wishes. I have just phoned Terry to arrange a packet of goodies to be sent to your Regional Group, and if we can be of further assistance, please don't hesitate to get in touch with us.
Cheers. SHANE.

JIM THREADGATE advises that meetings are being held every 2nd Wednesday in each month at MAITLAND CITY HALL and starts at 7:30pm.

NEWCASTLE REGIONAL NEWS

Newcastle club is calling for nominations to chair the Management Committee. This committee will consist of Club Co-Ordinator, Secretary, Treasurer, Librarian and Programmers Crisis Line.

June is going to be a big month for us, thanks to Computer Innovation Group P/Ltd, and Brian Rutherford, who have organized a demonstration of T.I. PROFESSIONAL COMPUTER. If you missed the last two computer shows in this area - don't miss this one, as I am sure it will be an interesting

experience!

Gary Jones has now started his weekly Basic tutorials, for further details phone (049) 573744.

A few Newcastle members have the technical details for the light pen, HELP! does any one have any programmes?

Good news that the Maitland area and surrounds - David Gunstone has started that new regional group He can be contacted on (049) 327003.

Hope to see continued attendance at the next regional meeting.

Regards, PETER COXON.

Peter, If you don't already have a copy of our LIGHTPEN program of TIC-TAC-TOW, please get in touch with us, with a tape or disk, and we'll send you a copy of it plus a Print out of it. It will be interesting to see what you do with it, in creating some other programs from that example. SHANE.

NEPEAN REGIONAL MEETING

Since the last issue of the S.N.D. The Nepean Regional Group has met twice. Meeting activities include reports on items of interest from Sydney and other Regional meetings I have attended, exchange of information, program tips and programs and sale of Club tapes.

The Nepean group has been represented at the Blaxland Regional Group meetings, and we intend to develop further closer relations with this group by regularly attending & participating in each others meetings. A full day local tutorial is planned to be held with the date to be announced.

The Group plans to have SPECIAL invited guests from TI.S.H.U.G. attend our local meeting, so don't make any plans to leave the country Shane, Peter and others.

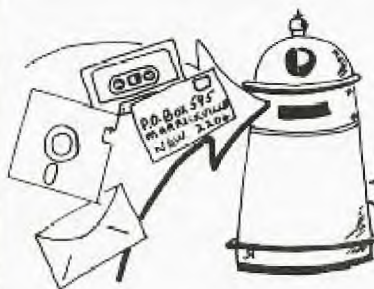
Meetings are held at the Penrith Police Boy's Club Arobics Room, the 1st and 3rd Mondays each month, time: 7 - 9pm. For further information, please phone either MALCOLM TUDOR (047)333673 or MEL COPELAND (047)351340.

Yours Sincerely,
MEL COPELAND.



Sydney News Digest

LETTERS TO THE EDITOR



Dear Editor,
Here are details of how to connect a cheap printer to the TI 99/4A RS232 Interface. The printer is the Tandy GCP115.

The two plugs can be easily obtained from Tandy Stores. They are a 25 pin D Plug and a 4 Pin Din Plug. The Pin numbers are as follows:-

Pin 1 on 25 Pin to Pin 4 on Din
Pin 2 on 25 Pin to Pin 1 on Din
Pin 7 on 25 Pin to Pin 3 on Din
Pin 20 on 25 Pin to Pin 2 on Din

The entry code for files RS232.BA=600.DA=7.PA=N IN QUOTES.

This may be a simple way for T.I. users to have print outs and simple forms of word processors.

Your Faithfully,
D. Atkinson,
Burley In Wharfedale.

Dear Editor,
I know the basis of the magazine is to help fellow users and I believe I have found a solution to the loading of tapes problem with must be fairly common with T.I. users.

If you have a cassette player that is equipped with "Vari-Speed" turn the control to +20% -- not only will the tape load first time, but it also loads the program faster, thus you are not sitting around looking at "ERROR DETECTED IN DATA" all day.

The only machines I have seen with this facility seem to be American, so if you want to save time you know what to do.

Meanwhile, I would like to wish your magazine all the best in the future - you're just what we have been waiting for.

Your Faithfully,
Phil Donald,
Manchester.

The following sub-routine is useful for mixing text with graphics.

```
1000 REM SUB-ROUTINE TEXT WITH GRAPHICS
1010 FOR I=1 TO LEN(TEXT$)
1020 X=X+1
1030 CALL HCHAR(Y,X,ASC(SEG$(TEXT$,I,1)))
1040 NEXT I
1050 RETURN
```

X and Y are the column number and row number of the first letter of the text, and along with the TEXT\$ must be defined each time in the main program before calling up the sub-routine. Care must be taken that X does not increment above 32 in line 1020 or the program will crash.

Your Faithfully,
Danny Widdows,
Cambridge.

We received a letter from RAY TUCKER in Auckland N.Z. who was asking about the availability of TI-WRITER & TE#2. Plus, wanted to know what he would get for the overseas membership fee of \$25.00.

TI-WRITERS are only just becoming available, and TE#2's have just arrived, so you'll be right there Ray. Regarding the membership fee. Yes that it correct, membership of our friends overseas is \$25 Australian. There is no Joining fee like the other members have to pay(\$10), but they also pay \$20pa. To cover the cost of Airmail postage of the club SYDNEY NEWSDIGEST, a \$25 fee was designed. As you may have noticed, the club Newsletter, is a little bit thicker than other User Group publications. With a wealth of information. And even though you would be unable to phone the Crisis Line, you still are able to purchase club tapes, and activate the new BBS when set up.

We wish you all of the very best with your group in Auckland. For those interested in corresponding with RAY TUCKER, he can be contacted at 63 Marriett Rd, Pakuranda, Auckland, New Zealand.

Dear Shane,
As a very new member, I am very impressed with your magazine.

I would like to purchase back copies, prior to my first copy(April'84). Could you please advise re availability of same, and please take this a a firm order.

Also, I see references to oter clubs. Would it be possible to get information about these clubs, other than tose listed in the April issue?

Thank you for what is obviously a very big job.
Gorgon Sneddon.

THANK YOU GORGON FOR YOUR COMMENTS ABOUT OUR SND. I ENJOY PUTTING IT TOGETHER. IT KEEPS ME OFF THE STREETS, AND I'M SURE THAT SYDNEY IS A BETTER PLACE BECAUSE OF THAT.

REGARDING BACK ISSUES, UNFORTUNATELY, WE HAVE ONLY BEEN PRINTING ABOUT 100 COPIES MORE THAN THE REGULAR MEMBERSHIP, EACH MONTH, AND THE CLUB HAS BEEN GROWING SO FAST, THAT THOSE SPARE COPIES HAVE BEEN GIVEN TO OUR NEW MEMBERS WHEN THEY JOIN. BECAUSE OF THIS, WE HAVE DECIDED TO PRINT 150 MORE COPIES THAN IS REQUIRED, BUT THAT STARTED AS OF THE LAST ISSUE. I ENDEVOUR TO REPRINT ITEMS OF INTEREST FROM PAST ISSUES, ONCE IN A WHILE, BUT THERE IS SO MUCH STUFF COMING IN THAT IT WOULD BE BETTER IF YOU GOT INVOLVED WITH A REGIONA GROUP, AND PERHAPS PHOTOCOPIED BACK ISSUES BELONGING TO THE MEMBERS.

CHEERS FOR NOW,
SHANE



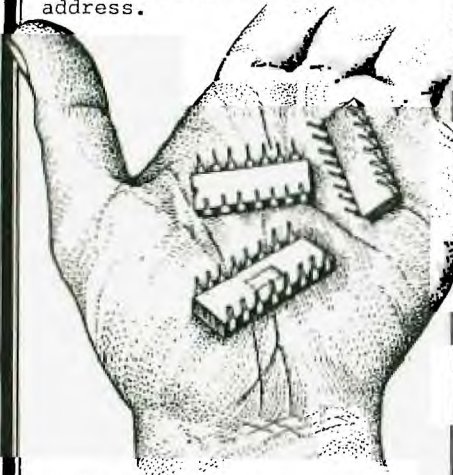
TECHO TIME

Well, the time has come to form a technical arm of our club. In the near future we will be trying to gauge club members needs and attempt to fulfil (hopefully) the low cost peripheral needs of our growing membership. We hope to provide good back-up for all devices produced.

In order to accomplish this task, we need to know what technical expertise, technical information (published low-cost peripherals, modifications etc.) members have available. Some members have volunteered their services already, these members I would like to contact me (ROBERT) on 602-4168 5.00-8.30 PM as soon as possible. Anyone else wishing to assist can also contact me.

If anyone has a technical problem just contact me or send a letter to "TECHO TIME" P.O. BOX 595 MARRACKVILLE 2204. And we will endeavour to find a solution.

Anyone wishing to contribute technical articles can send them to the above address.



The following was sent to us on silver THERMAL PAPER, so let's see how it re-produces.

HI TO ALL FELLOW TI USERS

I have written a small series of programs which lets me list both BASIC and X-BASIC programs through my JOYTALK serial interface

Unfortunately this is a slow process and entails the use of a disk drive. The process is as follows.

After saving your program to the medium you wish then list the program as follows

```
LIST "DSK1.PRT"
```

Change to extended basic and type in and run the following program

```
100 CALL CLEAR
```

```
110 OPEN #1:"DSK1.PRT".INPUT
```

```
120 OPEN #2:"DSK1.PRT1".OUTPUT.INTERNAL
```

```
130 IF EOF(1) THEN 240
140 INPUT #1:A$
150 PRINT A$
160 Z=LEN(A$)
170 IF Z=0 THEN 130
180 PRINT #2:Z
190 FOR X=1 TO Z
200 B$=SEG$(A$(X,1))
210 PRINT #2:B$
220 NEXT X
230 GOTO 130
240 CLOSE #2
250 CLOSE #1
```

When the program has finished running then goto to BASIC with MINIMEM and printer

```
Type and run this short program
1 CALL LINK("JSET",numeric variable)
100 CALL CLEAR
110 OPEN #1:"DSK1.PRT1".INPUT.INTERNAL
120 IF EOF(1) THEN 220
130 INPUT #1:Z
140 FOR X=1 TO Z
150 INPUT #1:A$
160 B$=B$&A$
170 NEXT X
180 PRINT B$
190 CALL LINK("JOYT",B$)
200 B$=""
210 GOTO 120
220 CLOSE #1
```

I can already hear the shouts of it's too slow or what use is it to me I don't have a disk drive but I answer this by saying I may not be the only one who has gotten a cheap printer and after the hole left in my wallet by the disk drive and peripheral box cost's have not been able to afford the price of the proper interface card.

On this point I would like to say something about the new technical group in T.I.S.H.U.G. these guys may be able to design and build things like the JOYTALK but it is up to us the user's to use them to the full of their limitation's and limitation's they will have because you cannot build ROLLS ROYCES with HOLDEN parts at HOLDEN prices

SO if you want a ROLLS then bye a ROLLS but me I'LL go with the HOLDENS fella's (or girl's) GOOD LUCK So to finish if any else find's this usefull that'll be great and if someone else knows of a faster way or a way in which a cassette can be used then let us know in the S.N.D. I'm sure myself and others will be very interested.

SO B.B.F.N. AND HAPPY TING
CHRIS POTTS

REGIONAL NEWS CONTINUED

LIVER-R-T-U-P GROUP
(Liverpool Regional Texas User Persons Group).

Ten persons and three TI-99/4A's (accompanied by various peripherals) attended the meeting at Campbelltown on Saturday 14th April. Robert Pollett from Croydon, was kind enough to attend, to demonstrate FORTH, using both 32k memory and the Mini memory versions. The demonstration was well presented and much appreciated by those attending.

Vince Cerrato provided a tutorial on the creation of Sprites in Extended Basic. From the discussion that evolved during this session, it appeared that it was well appreciated by all.

It is envisaged that demonstrations, tutorials and workshops will be planned for future meetings. It is proposed that meetings of LIVER-TUP Group will be held on the second Saturday of each month (except holiday weekends). Enquiries regarding meetings can be made by contacting Vince Cerrato 6377546 or Stan Puckle (046) 256157. The JUNE MEETING is planned for Saturday 16th June at the home of HANS ZECEVIC of Moorebank.

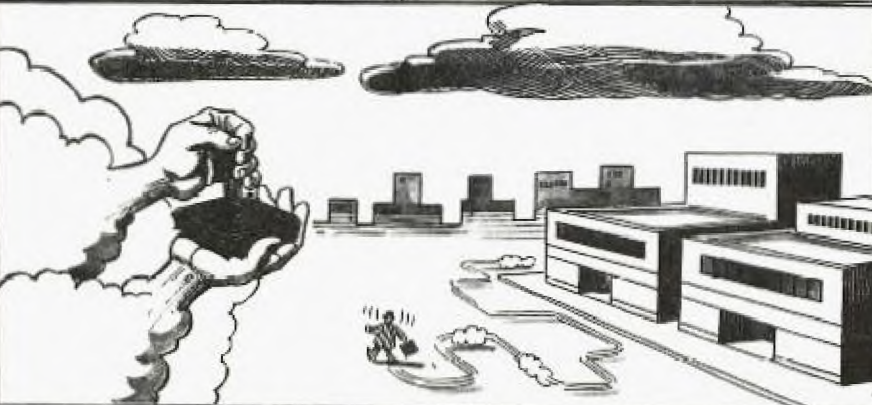
We thank the TI-99/4a's for attending and making the meeting possible, BYE For now.

MARRICKVILLE REGIONAL GROUP

This particular evening was a little smaller in attendance last month, as the first tuesday of the month, was also the first day of the month, hence, a few forgot to attend. And yet, the ten of us had a good time, and had the opportunity to down-load some very interesting new programs just received from SAN GABRIEL VALLEY in the U.S. of A.

The next meeting will be conducted at Shane's home once again, on the first Tuesday AFTER the next Club meeting/workshop tutorial at 7:30pm, Unit 1/37 George St, Marrickville. For further details, Shane can be contacted at his place of work on (02)291631.





MICRO was a real-time operator and dedicated multi-user. His broad-band protocol made it easy for him to interface with numerous input/output devices, even if it meant time-sharing.

One evening he arrived home just as the sun was crashing, and had parked his Motorola 68000 in the main drive (he had missed the S100 bus that morning), when he noticed an elegant piece of liveware admiring the daisy wheels in his garden. He thought to himself, "She looks user-friendly, I'll see if she'd like an update tonight".

Mini was her name, and she was delightfully engineered with eyes like COBOL and a Prime mainframe architecture that set Micro's peripherals networking all over the place.

He browsed over to her casually, admiring the power of her twin, 32-bit floating

point processors, and enquired "How are you Honeywell?". "Yes, I am well", she responded, batting her optical fibres engagingly and smoothing her console over her curvilinear functions.

Micro settled for a straight line approximation. "I'm stand-alone tonight", he said. "How about computing a vector to my base address, I'll output a byte to eat, and maybe we could get offset later on".

Mini ran a priority process for 2.6 milli-seconds then transmitted "8K, I've been dumped myself recently, and a new page is just what I need to refresh my disks. I'll park my machine cycle in your background and meet you inside. "She walked off, leaving Micro admiring her solenoids and thinking, "WOW, what a global variable, I wonder if she'll like my firmware."

They sat down at the process table to a top of form feed of fiche and chips and a bucket of baudot. Mini was in conversational mode and expanded on ambiguous arguments while Micro gave occasional acknowledgements although, in reality he was analysing the shortest and least critical path to her entry point. He finally settled on the old "would you like to see my bench-mark subroutine", but Mini was again one step ahead.

Suddenly she was up and stripping off her parity bits to reveal the full functionality of her operating system software. "let's get BASIC, you RAM", she said. Micro was loaded by this stage, but his hardware polling module had a processor of its own and was in danger of overflowing its output buffer, a hang-up that Micro had consulted his analyst about. "Core", was all he could say.

Micro soon recovered, however, when she went down on the DEC and opened her device files to reveal her data set ready. He accessed his fully packed root device and was just about to start pushing into her CPU stack, when she attempted an escape sequence.

"No, no!" she piped. "You're not shielded".

"Reset, baby", he replied. "I've been debugged".

"But I haven't got my current loop enabled, and I can't support child processes", she protested.

"Don't run away", he said, "I'll generate an interrupt".

"No that's too error prone, and I can't abort because of my design philosophy".

Micro was locked in by this stage though, and could not be turned off. But she soon stopped his thrashing by introducing a voltage spike into his mains supply, whereupon he fell over with a head crash and went to sleep.

"Computers", she thought as she compiled herself, "all they ever think of is Hex".





programming with Russell our MUSIC CO-ORDINATOR



```

1 *****
2 1* BABY ELEPHANT WALK. *
3 1* by Henry MANCINI. *
4 1* & Russell WELHAM. *
5 1* EXTENDED BASIC. *
6 1* 23rd APRIL 1984. *
7 1* Version 3. *
8 *****
9
10 DISPLAY AT(11,5)ERASE ALL
: "BABY ELEPHANT WALK": : "by
Henry MANCINI & R WELHAM
"
11 [FOR DELAY=1 TO 200 :: NEX
T DELAY
12 CALL CHAR(96,"0000E0F0303
0"&RPT$( "0",20)&"383E"&RPT$(
"3F",14))
13 !@P-
14 CALL CHAR(100,"00C0E0F0F0
E0C0C0E0F8FCFFFFFFF"&RPT$(
"0",24)&"8080C0C0")
15 CALL CHAR(104,"FFFF"&RPT$(
"F",20)&"FEF00000FFFFFFF
FFFFFFFCF8F0C00000000")
16 CALL CHAR(108,"0060900808
0810E0")
17 CALL CHAR(112,"FFFF"&RPT$(
"0",28)&"808000000707"&RPT$(
"0",20))
18 CALL CHAR(116,"F8F8"&RPT$(
"0",60))
19 CALL CHAR(120,RPT$( "F",28
)&RPT$( "0",32)&"FFFF")
20 CALL CHAR(40,"00000000030
F3FFF",41,"00000000C0F0F8FC"
,42,"0103070F1F1F3F3F",4
3,"FEF8E0E0C0C08080")
21 CALL CHAR(44,"7F7F7FFFFFF
FFFF",45,"000000000080C0"
,46,"00000103070F1F3F",4
7,"0078FFFFFFF")
22 CALL CHAR(48,"00000000C0C
0F0F0",49,"FFFFFF7F7F3F3F1F"
,50,RPT$( "F",16),51,"FCF
CFEFFFFFFC3C3",52,"00000000
0C0FFFF")
23 CALL CHAR(53,"0000000000
0FFF",54,"000000000000F0FC"
,55,"1F0F070301",56,"FFF
FFFFFFF3F",57,"0F0FCFCFF
FFFFFF")
24 CALL CHAR(58,RPT$( "C0",8)
,59,"3F3F0F0F0F0F3F3F",60,"8
080E0F0F8FCFEFF",61,"0F0
7000000000307",62,"C70F1F3F7
FFFFFF")
25 CALL CHAR(63,"0F0F",64,"8
080C0E0E0E0E0F0",65,"3F1F0F0
F0F0F0F0F",66,"00000000
0FFFFFF",67,RPT$( "F0",8),68,
"0F0F0F0F1F1F1F")
26 CALL CHAR(69,"C0C0FFFFFFF
FFFF",70,"1F1FFFFFFF")
,71,"E0E0E0C0C0C08080",7
2,"1F3F3F3F3F3F3F3F",73,"FFF
FFFFFF")
27 CALL CHAR(74,"FFFFFFF0303
F0303",75,"8080",76,RPT$( "3F
",8),77,RPT$( "F3",8),78,
RPT$( "03",8),79,"3F3F",80,"F
3F303030303",81,"FFFFFFF")
    
```

```

28 CALL CHAR(82,"03030303",8
3,"FFFFFFF",84,"FF")
29 CALL CHAR(88,"003844447C4
44444",90,"003C40405C444438"
,92,"0000040810204000",9
4,"0038101010101038",95,"004
040404040407C")
30 !@P+
31 CALL CHAR(124,"0044646454
4C4C44",125,"007844447840404
0",126,"0038440408100010
"): : CALL CLEAR
32 FOR I=2 TO 7 :: CALL COLO
R(I,15,1):: NEXT I :: CALL S
CREEN(16):: CALL COLOR(1
3,4,4):: CALL HCHAR(22,1,12E
,96)
33 !@P-
34 DISPLAY AT(11,17):" ( ) " :
: DISPLAY AT(12,17):"*+ " ::
DISPLAY AT(13,17):",-./0
"
35 DISPLAY AT(14,17):"122234
56" :: DISPLAY AT(15,17):"78
29::22<1" :: DISPLAY AT(
16,17):" =>2:??222a"
36 DISPLAY AT(17,19):"A2:B22
2C" :: DISPLAY AT(18,17):"
D2EF222G" :: DISPLAY AT(
19,17):" H22IIJ2K"
37 DISPLAY AT(20,17):" LM2
N2" :: DISPLAY AT(21,17):"
OPQ RS"
38 DISPLAY AT(11,5)SIZE(10):
" ( ) " :: DISPLAY AT(12,5)SIZ
E(10):"*+ " :: DISPLAY AT
(13,5)SIZE(10):",-./0"
39 DISPLAY AT(14,5)SIZE(10):
"12223456" :: DISPLAY AT(15,
5)SIZE(11):"7829::22<1"
:: DISPLAY AT(16,5)SIZE(10):
" =>2:??222a"
40 DISPLAY AT(17,7)SIZE(10):
"A2:B222C" :: DISPLAY AT(18,
5)SIZE(10):" D2EF222G"
:: DISPLAY AT(19,5)SIZE(10):
" H22IIJ2K"
41 DISPLAY AT(20,5)SIZE(10):
" LM2 N2" :: DISPLAY AT(21
,5)SIZE(10):" OPQ RS"
42 !@P+
43 CALL MAGNIFY(3)
44 CALL SPRITE(#6,96,2,111,7
3,#7,96,2,111,169)
45 !@P-
46 CALL SPRITE(#8,100,2,111,
89,#9,100,2,111,185)
47 CALL SPRITE(#10,104,2,127
,83,#11,104,2,127,179)
48 CALL SPRITE(#12,112,2,163
,67,#13,112,2,163,163)
49 CALL SPRITE(#14,116,2,167
,83,#15,116,2,167,179)
50 CALL SPRITE(#16,120,2,151
,104,#17,120,2,151,200)
51 !@P+
52
53 A1=111 :: AS1,BF1=117 ::
B1=123 :: C1=131 :: CS1,DF1=
139 :: D1=147 :: DS1,EF1
=156 :: E1=165 :: F1=175 ::
FS1,GF1=185 :: G1=196 :: GS1
,AF2=208
54 A2=220 :: AS2,BF2=233 ::
B2=247 :: C2=262 :: CS2,DF2=
277 :: D2=294 :: DS2,EF2
=311 :: E2=330 :: F2=349 ::
FS2,GF2=374 :: G2=392 :: GS2
,AF3=415
    
```

```

55 A3=440 :: AS3,BF3=466 ::
B3=494 :: C3=523 :: CS3,DF3=
554 :: D3=587 :: DS3,EF3
=622 :: E3=659 :: F3=698 ::
FS3,GF3=740 :: G3=784 :: GS3
,AF4=831
56 A4=880 :: AS4,BF4=932 ::
B4=988 :: C4=1047 :: CS4,DF4
=1109 :: D4=1175 :: DS4,
EF4=1245 :: E4=1319 :: F4=13
97 :: FS4,GF4=1480 :: G4=156
8 :: GS4,AF5=1661
57 A5=1760 :: C0=982 :: CS0,
DF0=1040 :: D0=1102 :: DS0,E
F0=1168 :: E0=1237 :: F0
=1311 :: FS0,GF0=1389 :: G0=
1471 :: GS0,AF1=1559 :: R=40
000
58 X=175 :: Y=350 :: FLAG=0
59
60
61
62 GOTO 73
63 CALL SOUND(T,S1,V1,S2,V2,
S3,30,-4,V3):: RETURN
64 CALL SOUND(T,S1,V1,S2,V2,
S3,V3):: RETURN
65 CALL SOUND(T,S1,V1,S2,V2)
:: RETURN
66 CALL SOUND(T,S1,V1):: RET
URN
67 CALL SOUND(T,S3,30,S3,30,
S3,30,-4,V3):: RETURN
68 CALL SOUND(T,S3,V3):: RET
URN
69
70
71
72
73 T=X :: S1=C1 :: S2,S3=F0
:: V1,V3=6 :: V2=30 :: GOSUB
63 :: GOSUB 63 :: S1=A4
:: S2=F3 :: S3=GS0 :: V1,V2
=0 :: GOSUB 63
74 !@P-
75 S3=A1 :: GOSUB 64 :: S1=C
1 :: S2,S3=F0 :: V1=6 :: V2=
30 :: GOSUB 63 :: GOSUB
63 :: S1=G3 :: S2=E3 :: S3=G
80 :: V1,V2=0 :: GOSUB 63
76 S3=A1 :: GOSUB 64
77 !@P+
78 FOR I=1 TO 2 :: S1=C1 ::
S2,S3=F0 :: V1=6 :: V2=30 ::
GOSUB 63 :: GOSUB 63 ::
S3=GS0 :: GOSUB 67 :: S1=A1
:: V1=6 :: GOSUB 66 :: NEXT
I
79 !@P-
80 IF FLAG=0 THEN B1 ELSE FL
AG=1 :: GOTO 73
81 FLAG=0 :: GOSUB 82 :: GOT
O 85
82 S1=F3 :: S2=C1 :: S3=F0
:: V1=0 :: V2=6 :: GOSUB 63
:: T=X*5 :: GOSUB 63 ::
S1=C4 :: S2,S3=GS0 :: V2=30
83 GOSUB 63 :: S1=F4 :: S2=A
1 :: V2=6 :: GOSUB 65 :: S1=
A5 :: S2=C1 :: S3=F0
V2,V3=6 :: GOSUB 63 :: S1=G4
:: GOSUB 63 :: S1=F4
84 S2,S3=GS0 :: V2=30 :: GOS
UB 63 :: S1=D4 :: S2=A1 :: V
2=6 :: GOSUB 65 :: RETUR
N
    
```

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```

85 S1=B4 :: S2=C1 :: S3=F0 :
: GOSUB 63 :: S1=C4 :: GOSUB
63 :: S3=GS0 :: GOSUB 6
7 :: S1=A1 :: V1=6 :: GOSUB
66
86 S1=C1 :: S2,S3=F0 :: V2=3
0 :: GOSUB 63 :: GOSUB 63 ::
S3=GS0 :: GOSUB 67 :: S
1=A1 :: GOSUB 66 :: COSUB 82
87 S1=C4 :: S2=C1 :: S3=F0 :
: V1=0 :: V2,V3=6 :: GOSUB 6
3 :: GOSUB 63 :: S2,S3=G
80 :: V2=30 :: GOSUB 63 :: S
2=A1 :: V2=6 :: GOSUB 65
88 S2=C1 :: S3=F0 :: GOSUB 6
3 :: GOSUB 63 :: S1=D4 :: S2
=CS1 :: GOSUB 65 :: S1=A
F4 :: S2=D1 :: GOSUB 65
89 S2=F1 :: S3=BF1 :: GOSUB
64 :: GOSUB 64 :: S2=CS1 ::
GOSUB 65 :: S2=D1 :: GOS
UB 65 :: S2=F1 :: GOSUB 64 :
: GOSUB 64 :: S2=CS1 :: GOSU
B 65
90 S1=D4 :: S2=D1 :: GOSUB 6
5 :: S1=A4 :: S2=F1 :: GOSUB
64 :: S1=F3 :: GOSUB 64
:: S1=CS1 :: V1=6 :: GOSUB
66 :: S1=D1 :: GOSUB 66
91 S1=F1 :: S2=BF1 :: GOSUB
65 :: GOSUB 65 :: S3=GS0 ::
GOSUB 67 :: S1=A1 :: GOS
UB 66 :: GOSUB 82 :: S1=B4 :
: S2=C1 :: S3=F0 :: V1=0
92 GOSUB 63 :: S1=C4 :: GOSU
B 63 :: S3=GS0 :: GOSUB 67 :
: S1=A1 :: V1=6 :: GOSUB
66 :: S1=C1 :: S2,S3=F0 ::
V2=30 :: GOSUB 63 :: GOSUB 6
3
93 S1=DS1 :: GOSUB 66 :: S1=
C4 :: S2=E1 :: V1=0 :: V2=6
:: GOSUB 65
94 S1=G4 :: S2=G1 :: S3=C1 :
: GOSUB 64 :: GOSUB 64 :: S2
=DS1 :: GOSUB 65 :: S2=E
1 :: GOSUB 65 :: S1=E4 :: S2
=G1 :: GOSUB 64 :: S1=C4
95 GOSUB 64 :: S1=CS1 :: V1=
6 :: GOSUB 66 :: S1=C4 :: S2
=D1 :: V1=0 :: GOSUB 65
96 S1=F4 :: S2=F1 :: S3=BF1
:: GOSUB 64 :: GOSUB 64 :: S
2=CS1 :: GOSUB 65 :: S2=
D1 :: GOSUB 65 :: T=X*.5 ::
S1=BF4 :: S2=F1 :: GOSUB 64
97 S1=F4 :: GOSUB 64 :: S1=E
F4 :: GOSUB 64 :: S1=C4 :: G
OSUB 64 :: T=X :: S1=BF4
:: S2,S3=GS0 :: V2=30 :: GO
SUB 63 :: S1=GS3 :: S2=A1
98 V2=6 :: GOSUB 65 :: S1=B4
:: S2=C1 :: S3=F0 :: GOSUB
63 :: GOSUB 63 :: S2,S3=
GS0 :: V2=30 :: GOSUB 63 ::
S2=A1 :: V2=6 :: GOSUB 65
99 T=X*.5 :: S1=BF4 :: S2=C1
:: S3=F0 :: GOSUB 63 :: S1=
B4 :: GOSUB 63 :: S1=BF4
:: GOSUB 63 :: S1=AF4 :: GO
SUB 63 :: T=X :: S1=F3
100 S2,S3=GS0 :: V2=30 :: GO
SUB 63 :: S1=C3 :: S2=A1 ::
V2=6 :: GOSUB 65
101 S1=EF3 :: S2=C1 :: S3=F0
:: GOSUB 63 :: S1=F3 :: GOS
UB 63 :: S3=GS0 :: GOSUB
67 :: S1=A1 :: V1=6 :: GOSU
B 66 :: S1=R :: S2=C1 :: S3=
F0
102 GOSUB 63 :: GOSUB 63 ::
S3=GS0 :: GOSUB 67 :: S1=A1
:: GOSUB 66

```

```

103 S1=C1 :: S2,S3=F0 :: V1=
6 :: V2=30 :: GOSUB 63 :: GO
SUB 63 :: S1=A2 :: S2=F1
:: S3=GS0 :: V1,V2=0 :: GOS
UB 63 :: S3=A1 :: GOSUB 64
104 S1=R :: S2=C1 :: S3=F0 :
: V2=6 :: GOSUB 63 :: GOSUB
63 :: S1=G1 :: S2=BF1 ::
S3=GS0 :: V2=0 :: GOSUB 63
:: S3=A1 :: GOSUB 64
105 S1=R :: S2=C1 :: S3=F0 :
: V2=6 :: GOSUB 63 :: GOSUB
63 :: S3=GS0 :: GOSUB 67
:: S3=A1 :: GOSUB 68 :: S3=
F0 :: GOSUB 63 :: GOSUB 63
106 S3=GS0 :: GOSUB 67 :: S3
=A1 :: GOSUB 68 :: IF FLAG>0
THEN 107 ELSE FLAG=1 ::
GOTO 103
107 FLAG=0 :: GOSUB 108 :: G
OTO 111
108 S1=F2 :: S3=F0 :: GOSUB
63 :: T=X*.5 :: GOSUB 63 ::
S1=A3 :: GOSUB 63 :: T=X
:: S1=C3 :: S2,S3=GS0 :: V2
=30 :: GOSUB 63 :: S1=F3 ::
S2=A1
109 V2=6 :: GOSUB 65 :: S1=A
4 :: S2=C1 :: S3=F0 :: GOSUB
63 :: S1=G3 :: GOSUB 63
:: S1=F3 :: S2,S3=GS0 :: V2
=30 :: GOSUB 63 :: S1=D3
110 S2=A1 :: V2=6 :: GOSUB 6
5 :: RETURN
111 S1=B3 :: S2=C1 :: S3=F0
:: GOSUB 63 :: S1=C3 :: GOSU
B 63 :: S3=GS0 :: GOSUB
67 :: S3=A1 :: GOSUB 68 :: S
1=R :: S3=F0 :: GOSUB 63
112 GOSUB 63 :: S3=GS0 :: GO
SUB 67 :: S3=A1 :: GOSUB 68
:: GOSUB 108 :: S1=C3 ::
S3=F0 :: GOSUB 63 :: GOSUB
63 :: S2=R :: S3=GS0 :: GOSU
B 63
113 S3=A1 :: GOSUB 64 :: S2=
C1 :: S3=F0 :: GOSUB 63 :: G
OSUB 63 :: S1=D3 :: S2=C
S1 :: GOSUB 65 :: S1=AF3 ::
S2=D1 :: GOSUB 65
114 S2=F1 :: S3=BF1 :: GOSUB
64 :: GOSUB 64 :: S2=CS1 ::
GOSUB 65 :: S2=D1 :: GO
SUB 65 :: S2=F1 :: GOSUB 64
:: GOSUB 64 :: S2=CS1 :: GOS
UB 65
115 S1=D3 :: S2=D1 :: GOSUB
65 :: S1=A3 :: S2=F1 :: GOSU
B 64 :: S1=F2 :: GOSUB 6
4 :: S3=CS1 :: GOSUB 68 :: S
3=D1 :: GOSUB 68 :: S1=R
116 S2=F1 :: S3=BF1 :: GOSUB
64 :: GOSUB 64 :: S3=GS0 ::
GOSUB 67 :: S3=A1 :: GO
SUB 68 :: GOSUB 108
117 S1=B3 :: S2=C1 :: S3=F0
:: GOSUB 63 :: S1=C3 :: GOSU
B 63 :: S3=GS0 :: GOSUB
67 :: S3=A1 :: GOSUB 68 :: S
1=R :: S3=F0 :: GOSUB 63
118 GOSUB 63 :: S3=DS1 :: GO
SUB 68 :: S3=E1 :: GOSUB 68
:: S1=G3 :: S2=G1 :: S3=
C1 :: GOSUB 64 :: GOSUB 64 :
: S2=DS1 :: GOSUB 65 :: S2=E
1
119 GOSUB 65 :: S1=E3 :: S2=
G1 :: GOSUB 64 :: S1=C3 :: G
OSUB 64 :: S3=CS1 :: GOS
UB 68 :: S2=D1 :: GOSUB 65
120 S1=F3 :: S2=F1 :: S3=BF1
:: GOSUB 64 :: GOSUB 64 ::
S2=CS1 :: GOSUB 65 :: S2
=D1 :: GOSUB 65 :: T=X*.5 ::
S1=EF3 :: S2=F1 :: GOSUB 64

```

```

121 S1=F3 :: GOSUB 64 :: S1=
EF3 :: GOSUB 64 :: S1=C3 ::
GOSUB 64 :: T=X :: S1=BF
3 :: S2,S3=GS0 :: V2=30 :: G
OSUB 63 :: V2=6 :: S1=GS2
122 S2=A1 :: GOSUB 65 :: S1=
D3 :: S2=C1 :: S3=F0 :: GOSU
B 63 :: GOSUB 63 :: S2,S
3=GS0 :: V2=30 :: GOSUB 63 :
: S2=A1 :: V2=6 :: GOSUB 65
123 T=X*.5 :: S1=BF3 :: S2=C
1 :: S3=F0 :: GOSUB 63 :: S1
=B3 :: GOSUB 63 :: S1=BF
3 :: GOSUB 63 :: S1=AF3 :: G
OSUB 63 :: T=X :: S1=F2
124 S2,S3=GS0 :: V2=30 :: GO
SUB 63 :: S1=C2 :: S2=A1 ::
V2=6 :: GOSUB 65 :: S1=E
F2 :: S2=C1 :: S3=F0 :: GOSU
B 63 :: S1=F2 :: GOSUB 63
125 S1=D2 :: S2=F1 :: S3=BF1
:: GOSUB 64 :: GOSUB 64 ::
S1=C2 :: S2=E1 :: S3=A1
:: GOSUB 64 :: GOSUB 64 :: S
1=BF2 :: S2=D1 :: S3=GO
126 GOSUB 63 :: GOSUB 63 ::
S1=A2 :: S2=C1 :: S3=F0 :: G
OSUB 63 :: S1=R :: GOSUB
63 :: S1=A4 :: S2=F3 :: S3=
GS0 :: V2=0 :: GOSUB 63 :: S
3=A1
127 GOSUB 64 :: S1=R :: S2=C
1 :: S3=F0 :: V2=6 :: GOSUB
63 :: GOSUB 63 :: S1=G3
:: S2=E3 :: S3=GS0 :: V2=0 :
: GOSUB 63 :: S3=A1 :: GOSUB
64
128 S1=R :: S2=C1 :: S3=F0 :
: V2=6 :: GOSUB 63 :: GOSUB
63 :: S1=A4 :: S2=F3 ::
S3=GS0 :: V2=0 :: GOSUB 63 :
: S3=A1 :: GOSUB 64
129 S1=R :: S2=C1 :: S3=F0 :
: V2=6 :: GOSUB 63 :: GOSUB
63 :: S3=GS0 :: GOSUB 67
:: S1=C1 :: S2,S3=C0 :: V2=
30 :: GOSUB 63
130 T=Y :: S1=F1 :: S2,S3=F0
:: GOSUB 63 :: T=X :: S1=AF
2 :: S2,S3=AF1 :: GOSUB
63 :: S1=F1 :: S2,S3=F0 :: G
OSUB 63 :: S1=BF2 :: S2=BF1
131 V2=6 :: GOSUB 65 :: T=Y+
X :: S1=AF2 :: S2,S3=AF1 ::
V2=30 :: GOSUB 63 :: T=Y
:: S1=F4 :: S2=D4 :: S3=BF4
:: V2,V3=0 :: GOSUB 64
132 S2=C4 :: S3=A4 :: GOSUB
64 :: T=X :: S2=D4 :: S3=BF4
:: GOSUB 64 :: GOSUB 64
:: S2=C4 :: S3=A4 :: GOSUB
64 :: S1=R :: GOSUB 66
133 T=Y :: S1=F1 :: S2,S3=F0
:: V2=30 :: V3=6 :: GOSUB 6
3 :: T=X :: S1=AF2 :: S2
,S3=AF1 :: GOSUB 63 :: S1=F1
:: S2,S3=F0 :: GOSUB 63
134 S1=BF2 :: S2=BF1 :: V2=6
:: GOSUB 65 :: GOSUB 65 ::
S1=AF2 :: S2,S3=AF1 :: V
2=30 :: GOSUB 63 :: S1=F1 ::
S2,S3=F0 :: GOSUB 63
135 S1=AF2 :: S2,S3=AF1 :: G
OSUB 63 :: S1=F2 :: S2=F1 ::
S3=BF1 :: V2=6 :: GOSUB
64 :: S1=E2 :: S2=E1 :: GOS
UB 64
136 S1=EF2 :: S2=EF1 :: GOSU
B 64 :: S1=D2 :: S2=D1 :: GO
SUB 64 :: S1=DF2 :: S2=D
F1 :: GOSUB 64 :: S1=C2 :: S
2=C1 :: S3=F0 :: GOSUB 63

```

```

137 S1=B2 :: S2=B1 :: S3=AF1
:: GOSUB 63 :: S1=A2 :: S2=
BF1 :: S3=AF1 :: GOSUB 6
3 :: S2=F1 :: S3=BF1 :: GOSU
B 64 :: S2=CS1 :: GOSUB 65
138 S2=D1 :: GOSUB 65 :: S2=
F1 :: GOSUB 64 :: GOSUB 64 ::
: S2=CS1 :: GOSUB 65 ::
S1=D2 :: S2=D1 :: GOSUB 65
139 S1=AF2 :: S2=F1 :: GOSUE
64 :: S1=F1 :: GOSUB 64 ::
S3=CS1 :: GOSUB 68 :: S3
=D1 :: GOSUB 68 :: S1=R :: S
3=BF1 :: GOSUB 64 :: GOSUB 6
4
140 S3=GS0 :: GOSUB 67 :: S3
=A1 :: GOSUB 68 :: GOSUB 82
:: S1=B4 :: S2=C1 :: S3=
F0 :: GOSUB 63 :: S1=C4 :: G
OSUB 63 :: S3=GS0 :: GOSUB 6
7
141 S3=A1 :: GOSUB 68 :: S1=
R :: S3=F0 :: GOSUB 63 :: GO
SUB 63 :: S3=DS1 :: GOSU
B 68 :: S1=C4 :: S2=E1 :: GO
SUB 65
142 S1=G4 :: S2=G1 :: S3=C1
:: GOSUB 64 :: GOSUB 64 :: S
2=DS1 :: GOSUB 65 :: S2=
E1 :: GOSUB 65 :: S1=E4 :: S
2=G1 :: GOSUB 64 :: S1=C4
143 GOSUB 64 :: S3=CS1 :: GO
SUB 68 :: S2=D1 :: GOSUB 65
:: S1=F4 :: S2=F1 :: S3=
BF1 :: GOSUB 64 :: GOSUB 64
:: S2=CS1 :: GOSUB 65 :: S2=
D1
144 GOSUB 65 :: T=X*.5 :: S1
=EF4 :: S2=F1 :: S3=BF1 :: G
OSUB 64 :: S1=F4 :: GOSU
B 64 :: S1=EF4 :: GOSUB 64 ::
: S1=C4 :: GOSUB 64 :: T=X
145 S1=BF4 :: S2,S3=GS0 :: G
OSUB 63 :: S1=AF4 :: S2=A1 ::
: GOSUB 65 :: GOSUB 82 ::
: S1=B4 :: S2=C1 :: S3=F0 ::
GOSUB 63 :: S1=C4 :: GOSUB
63
146 S3=GS0 :: GOSUB 67 :: S3
=A1 :: GOSUB 68 :: S1=R :: S
3=F0 :: GOSUB 63 :: GOSU
B 63 :: S3=GS0 :: GOSUB 67 ::
: S3=A1 :: GOSUB 68 :: GOSUB
82
147 S1=C4 :: S2=C1 :: S3=F0
:: GOSUB 63 :: GOSUB 63 :: S
2,S3=GS0 :: V2=30 :: GOS
UB 63 :: S2=A1 :: V2=6 :: GO
SUB 65
148 S2=C1 :: S3=F0 :: GOSUB
63 :: GOSUB 63 :: S1=D4 :: S
2=CS1 :: GOSUB 65 :: S1=
AF4 :: S2=D1 :: GOSUB 65
149 S2=F1 :: S3=BF1 :: GOSUB
64 :: GOSUB 64 :: S2=CS1 ::
GOSUB 65 :: S2=D1 :: GO
SUB 65 :: S2=F1 :: S3=BF1 ::
GOSUB 64 :: GOSUB 64
150 S2=CS1 :: GOSUB 65 :: S1
=D4 :: S2=D1 :: GOSUB 65 ::
S1=A4 :: S2=F1 :: S3=BF1
:: GOSUB 64 :: S1=F3 :: GOS
UB 64 :: S3=CS1 :: GOSUB 68
151 S3=D1 :: GOSUB 68 :: S1=
R :: S3=BF1 :: GOSUB 64 :: G
OSUB 64 :: S3=GS0 :: GOS
UB 67 :: S3=A1 :: GOSUB 68 ::
: GOSUB 82 :: S1=B4 :: S2=C1
152 S3=F0 :: GOSUB 63 :: S1=
C4 :: GOSUB 63 :: S3=GS0 ::
GOSUB 67 :: S3=A1 :: GOS
UB 68 :: S1=R :: S3=F0 :: GO
SUB 63 :: GOSUB 63 :: S3=DS1

```

```

153 GOSUB 68 :: S1=C4 :: S2=
E1 :: GOSUB 65 :: S1=G4 :: S
2=G1 :: S3=C1 :: V2=6 ::
GOSUB 64 :: GOSUB 64 :: S2=
DS1 :: GOSUB 65
154 S2=E1 :: GOSUB 65 :: S1=
E4 :: S2=G1 :: S3=C1 :: V2=6
:: GOSUB 64 :: S1=C4 ::
GOSUB 64 :: S3=CS1 :: GOSUB
68 :: S2=D1
155 GOSUB 65 :: S1=F4 :: S2=
F1 :: S3=BF1 :: V2=6 :: GOSU
B 64 :: GOSUB 64 :: S2=C
S1 :: GOSUB 65 :: S2=D1 :: G
OSUB 65
156 T=X*.5 :: S1=EF4 :: S2=F
1 :: GOSUB 64 :: S1=F4 :: GO
SUB 64 :: S1=EF4 :: GOSU
B 64 :: S1=C4 :: GOSUB 64 ::
T=X :: S1=BF4 :: S2,S3=GS0
157 GOSUB 63 :: S1=AF4 :: S2
=A1 :: GOSUB 65 :: S1=F3 ::
S2=C1 :: S3=F0 :: GOSUB
63 :: S3=R :: GOSUB 68
158 T=Y*2 :: S1=C2 :: S2=C1
:: GOSUB 65 :: S1=D2 :: S2=D
1 :: GOSUB 65 :: S1=C2 ::
: S2=C1 :: GOSUB 65
159 T=Y*8 :: S1=EF2 :: S2=C1
:: S3=F0 :: GOSUB 63
160 CALL SOUND(1,R,30)
161 T=-Y :: S3=D3 :: GOSUB 6
8 :: S3=EF3 :: GOSUB 68 :: S
3=G3 :: GOSUB 68 :: S3=B
4 :: GOSUB 68
162 !@P+
163 STOP

```



This T.1.99/4A subprogram allows the transfer of a keyboard character directly into a program. It eliminates using the INPUT statement while saving time obtaining data from a single key. Screen information is not disturbed by using CALL KEY because the key pressed is not displayed there.

The command has the forms listed below:-

```
CALL KEY(O,KEY,STATUS)
```

```
CALL KEY(O,K,ST)
```

O=KEY UNIT (May be any digit 0-5)

KEY=RETURN - Variable or key to be pressed by user on keyboard

STATUS=STATUS - Variable or has a key been pressed on keyboard yet

O=No key pressed while I=A key pressed.

The KEY-UNIT portion has the following effect upon keyboard status or mode of operation:

O=Console keyboard, in a mode previously specified by CALL KEY.

I=Left side of console keyboard or Remote Control 1.

2=Right side of keyboard or Remote Control 2.

3=Standard Keyboard mode - All letter keys are upper case only, Puspose of Alpha Lock Key, with function keys returning Codes 1 to 15.

4=PASCAL keyboard mode.

5=BASIC keyboard mode - Both upper and lower case alphabet characters, FUNCTION key modes=1 to 5, Control key codes=128 to 159 & 187,

The RETURN-VARIABLE must be numeric variable. The computer uses the ASCII Code value of the key depressed to determine what action to undertake. This will be illustrated in some sample programs.

The status-variable is also a numeric value which lets you know what is going on with the keyboard. The codes listed below show what the status variable would be after different computer operations have occurred:-

+1=A new key was depressed since the performance of the CALL KEY routine.

-1-The same key was pressed during this CALL KEY routine as the previous use of this routine.

0=No key was pressed.

How many times have you seen your screen "PRESS ANY KEY TO CONTINUE". This is a very simple two line routine to add to any program. It is usually used to place game instructions on the screen:-

LINE # PROGRAM STATEMENT

```
510 CALL KEY(O,K,ST)
520 IF ST=0 THEN 510
```

Let us assume you need to make a simple "(Y/N)" decision. Perhaps whether you desire to "PLAY AGAIN" (Y/N).

LINE # PROGRAM STATEMENT

```
510 CALL KEY(O,K,ST)
520 IF ST=0 THEN 510
530 IF ST=89 THEN XXZ
(Y)ES
540 IF ST=78 THEN XXX
(N)G
```

Some notes on the program above. The status-return (ST) check should be placed next to the CALL KEY statement. What the computer does is loop between these two program lines until a key is depressed. At that time it steps to the next appropriate statement and executes that instruction.

FROM BUG BYTES
CALL KEY

Sydney News Digest

100 REM HERE ARE SOME PROGRAMS FOR YOU TO TYPE IN. TAKE YOUR TIME AND TYPE
 110 REM CAREFULLY. THE LISTINGS ARE FROM TESTED PROGRAMS. SO IF THEY CRASH
 120 REM CHECK YOUR TYPING. HAPPY KEYING. AND ENJOY THE PROGRAMS - TISHUG.
 130 REM HERE ARE SOME PROGRAMS FOR YOU TO TYPE IN. TAKE YOUR TIME AND TYPE
 140 REM CAREFULLY. THE LISTINGS ARE FROM TESTED PROGRAMS. SO IF THEY CRASH
 150 REM CHECK YOUR TYPING. HAPPY KEYING. AND ENJOY THE PROGRAMS - TISHUG.
 160 REM HERE ARE SOME PROGRAMS FOR YOU TO TYPE IN. TAKE YOUR TIME AND TYPE
 170 REM CAREFULLY. THE LISTINGS ARE FROM TESTED PROGRAMS. SO IF THEY CRASH
 180 REM CHECK YOUR TYPING. HAPPY KEYING. AND ENJOY THE PROGRAMS - TISHUG.
 190 REM HERE ARE SOME PROGRAMS FOR YOU TO TYPE IN. TAKE YOUR TIME AND TYPE
 200 REM CAREFULLY. THE LISTINGS ARE FROM TESTED PROGRAMS. SO IF THEY CRASH
 210 REM CHECK YOUR TYPING. HAPPY KEYING. AND ENJOY THE PROGRAMS - TISHUG.

PROGRAM LISTINGS

```

10 REM #####
20 REM # SQUARES #
30 REM # BY #
40 REM # J.P.ASHMORE #
50 REM # TI.S.H.U.G. #
60 REM #####
70 CALL CLEAR
80 GOSUB 1420
90 GOSUB 970
100 PRINT "DO YOU WANT TO KNOW THE RULES YES OR NO?"
110 CALL KEY(0,K,S)
120 IF S=0 THEN 110
130 IF K<>89 THEN 400
140 GOTO 150
150 CALL CLEAR
160 CALL SCREEN(14)
170 PRINT "THE INTENT OF THE GAME IS TO PLACE A SQUARE, OF UNKNOWN SIZE, IN THE MIDDLE, OF THE SCREEN."
180 FOR DELAY=1 TO 1400
190 NEXT DELAY
200 PRINT : : : :
210 PRINT "THE FIRST NUMBER STATES HOW FAR FROM THE TOP, THE UPPER LEFT CORNER I S.!!THE NUMBER YOU INPUT VARIES!"
220 FOR DELAY=1 TO 1400
230 NEXT DELAY
240 PRINT : : : :
250 PRINT "THE NEXT NUMBER STATES! HOW FAR FROM THE LEFT THE SQUARE IS!!!!THE NUMBER VARIES!!!!!"
260 FOR DELAY=1 TO 1400
270 NEXT DELAY
280 PRINT : : : :
290 PRINT "THE THIRD NUMBER! STATES THE SIZE OF THE SQUARE, THIS TOO VARIES AND ONLY ONE! SQUARE FITS."
300 FOR DELAY=1 TO 1400
310 NEXT DELAY
320 PRINT : : : :
330 PRINT "THE LAST NUMBER! STATES THE COLOR OF THE SQUARE YOUR CHOICE !!!!!LUCKY YOU!"
340 FOR DELAY=1 TO 1400
350 NEXT DELAY
360 PRINT : : : :
370 PRINT TAB(10);"GOOD LUCK"

380 FOR DELAY=1 TO 400
390 NEXT DELAY
400 CALL CLEAR
410 CALL COLOR(16,1,1)
420 CALL SCREEN(5)
430 ROW=H
440 PRINT "TOP LINE"
450 RANDOMIZE
460 INPUT H
470 IF H=1 THEN 460
480 H=H+INT(RND*3)
490 IF H<>7 THEN 510
500 PRINT "YOU*"
510 COLUMN=V
520 PRINT "DISTANCE FROM SIDE";

```

```

530 RANDOMIZE
540 INPUT V
550 IF V=1 THEN 540
560 V=V+INT(RND*3)
570 IF V<>11 THEN 590
580 PRINT "***MADE**"
590 REPETITION=Q
600 PRINT "SIZE OF SQUARE";
610 RANDOMIZE
620 INPUT Q
630 IF Q+H>20 THEN 620
640 IF Q+V>30 THEN 620
650 IF Q<>10 THEN 720
660 PRINT "*****IT*****"

670 IF H<>7 THEN 720
680 IF V<>11 THEN 720
690 IF Q<>10 THEN 720
700 F=2
710 GOSUB 980
720 COLOR=Z
730 PRINT "COLOR OF SQUARE";
740 INPUT Z
750 IF Q=1 THEN 1360
760 CALL HCHAR(H+Q,V+1,129,Q-1)
770 CALL VCHAR(H,V,130,Q)
780 IF Q=1 THEN 1400
790 CALL VCHAR(H,V+Q,131,Q)
800 CALL HCHAR(H-1,V+1,132,Q-1)
810 CALL CHAR(134,"000000FF")

820 IF Q=1 THEN 1380
830 CALL CHAR(135,"0808080808080808")
840 CALL HCHAR(12,15-Q/2,134,Q+3)
850 CALL VCHAR(10-Q/2,16,135,Q+5)
860 CALL CHAR(132,"00000000000000FF")
870 IF Q=1 THEN 1530
880 FOR I=1 TO Q-1
890 CALL VCHAR(H,V+I,153,Q)
900 NEXT I
910 CALL COLOR(16,Z,Z)
920 CALL COLOR(13,16,1)
930 CALL SCREEN(5)
940 FOR DE=1 TO 1200
950 NEXT DE
960 GOTO 400
970 F=1
980 CALL COLOR(13,16,1)
990 CALL SCREEN(11)
1000 CALL CHAR(130,"0101010101010101")
1010 CALL CHAR(131,"8080808080808080")
1020 CALL COLOR(2,7,1)
1030 CALL CHAR(129,"FF")
1040 CALL CHAR(132,"00000000000000FF")
1050 CALL HCHAR(2,3,132,29)
1060 CALL HCHAR(23,3,129,29)
1070 CALL VCHAR(3,32,131,20)
1080 CALL VCHAR(3,2,130,20)
1090 PRINT TAB(7);"****SQUARES****"

```

```

1100 CALL HCHAR(17,12,129,9)
1110 CALL VCHAR(7,11,130,10)
1120 CALL VCHAR(7,21,131,10)
1130 CALL HCHAR(6,12,132,9)
1140 CALL HCHAR(18,10,42,13)
1150 CALL VCHAR(5,10,42,13)
1160 CALL VCHAR(5,22,42,13)
1170 CALL HCHAR(5,11,42,11)
1180 FOR A=1 TO 25
1190 CALL SCREEN(2)
1200 NEXT A
1210 CALL SCREEN(11)
1220 FOR U=1 TO 10
1230 CALL SOUND(200,440,2)
1240 NEXT U
1250 FOR T=1 TO 30
1260 CALL SCREEN(7)
1270 NEXT T
1280 IF F=1 THEN 100 ELSE 1290
1290 CALL CLEAR
1300 PRINT "PLAY AGAIN YES OR NO?"
1310 CALL KEY(0,K,S)
1320 IF S=0 THEN 1310
1330 IF K<>89 THEN 1570
1340 GOTO 400
1350 GOTO 800
1360 CALL HCHAR(H+Q,V+Q,129,Q)
1370 GOTO 770
1380 CALL HCHAR(H-1,V+1,132,Q)
1390 GOTO 830
1400 CALL VCHAR(H,V+Q+1,131,Q)
1410 GOTO 800
1420 PRINT TAB(5);"WELCOME TO SQUARES"
1430 PRINT : : : : :
: : : : :
1440 CALL HCHAR(2,2,42,30)
1450 CALL VCHAR(2,2,42,21)
1460 CALL VCHAR(2,31,42,21)
1470 CALL HCHAR(22,2,42,30)
1480 REM OPEN #1:"SPEECH",OUTPUT
1490 REM PRINT #1:"//22 48"
1500 REM PRINT #1:"WELCOME TO SQUARES"
1510 CALL CLEAR
1520 RETURN
1530 FOR I=1 TO Q
1540 CALL VCHAR(H,V+I,153,Q)
1550 NEXT I
1560 GOTO 910
1570 END

```



Software



The following programme presented itself to me late one night while i was towing with the use of asterisks (CHR 42) as sprites. The programme makes use of two important features of sprites-

1. The ability to move a sprite one pixel at a time.
2. the ability to superimpose one sprite over another.

While amazing simple, the programme is most effective.



```

100 REM *****
110 REM SPRITPEDE
120 REM BY GARRY CHRISTENSEN

125 REM OF TI.B.U.G
130 REM *****

140 CALL CLEAR :: CALL SCREE
N(16):: PRINT "SPRITPEDE" :
: ::
150 CALL COLOR(2,2,2):: CALL
HCHAR(24,1,42,64)
160 FOR A=4 TO 109 STEP 5 ::
FOR B=1 TO 7 :: GOSUB 190 :
: NEXT B :: NEXT A
170 FOR A=109 TO 4 STEP -5 :
: FOR B=7 TO 1 STEP -1 :: GO
SUB 190 :: NEXT B :: NEX
T A
180 GOTO 160
190 CALL SPRITE(#B,42,2,B*3+
A,150,#B+7,42,2,B*3+A+16,150
,#B+14,42,2,B*3+A+32,150
,#B+21,42,2,B*3+A+48,150)
200 RETURN
    
```

This is a programme to keep the preschoolers amused. It plays the tune of 5 Little Ducks, while the ducks waddle across the screen. I wrote it to demonstrate the T.I. at my daughter's preschool, and the kids really loved it.

```

10 REM *****
20 REM * 5 LITTLE DUCKS *
30 REM * BY S. NICHELSEN *
40 REM * OF TI.B.U.G *
50 REM *****
60 COUNT=6
70 CALL CLEAR :: CALL SCREEN
(6):: CALL HCHAR(10,1,40,480
):: CALL COLOR(2,3,3)
80 CALL HCHAR(2,8,143,3):: C
ALL HCHAR(3,7,143,5):: CALL
HCHAR(4,6,143,7):: CALL
HCHAR(5,5,143,9)
90 CALL HCHAR(6,6,143,7):: C
ALL HCHAR(7,7,143,5):: CALL
HCHAR(8,8,143,3):: CALL
COLOR(14,13,13)
100 CALL VCHAR(9,9,135,4)::
CALL COLOR(13,7,7):: CALL CH
AR(127,"88FFFF8888FFFF88
"):: CALL HCHAR(10,1,127,8)
110 CALL HCHAR(10,10,127,23)
:: CALL HCHAR(24,1,127,32)::
CALL COLOR(12,16,3)
120 CALL CHAR(96,"0000000207
1POF01010000000000000040FC0
808080008000000000000000
00")
130 CALL CHAR(104,"000000020
71POF01010000000000000040FC
080808008000000000000000
00")
140 CALL MAGNIFY(4)
150 CALL SPRITE(#1,96,16,150
,48,0,8):: CALL SPRITE(#2,10
4,11,130,24,0,8):: CALL
SPRITE(#3,104,11,110,24,0,8)
160 CALL SPRITE(#4,104,11,15
0,20,0,8):: CALL SPRITE(#5,1
04,11,90,40,0,8):: CALL
SPRITE(#6,104,11,90,20,0,8)
170 DATA 330,300,294,150,294
,150,262,300,523,300,494,300
,440,300,392,600,392,300
,262,150,262,150,349,300,330
,300
180 DATA 330,300,294,300,294
,600,330,150,330,150,294,300
,262,300,523,300,494,300
,440,300,392,300,392,150,392
,300
190 DATA 262,300,349,300,330
,150,330,150,294,300,294,300
,262,600
200 RESTORE
210 FOR A=1 TO 33
220 READ T,D
230 CALL SOUND(D,T,1)
240 NEXT A
250 IF COUNT=1 THEN 280
260 CALL DELSPRITE(#COUNT)
270 FOR DELAY=1 TO 500 :: NE
XT DELAY
280 COUNT=COUNT-1
290 IF COUNT=0 THEN 340
300 IF COUNT=1 THEN 200
310 CALL SPRITE(#2,104,11,13
0,204,0,8):: CALL SPRITE(#3,
104,11,110,200,0,8)
320 CALL SPRITE(#4,104,11,15
0,190,0,8):: CALL SPRITE(#5,
104,11,90,220,0,8):: CAL
L SPRITE(#6,104,11,90,200,0,
8)
330 GOTO 200
340 CALL MOTION(#1,0,0):: CA
LL MOTION(#2,0,0):: CALL MOT
    
```

```

ION(#3,0,0):: CALL MOTIO
N(#4,0,0):: CALL MOTION(#5,0
,0)
350 CALL MOTION(#6,0,0)
360 FOR DELAY=1 TO 900 :: NE
XT DELAY
370 END
    
```



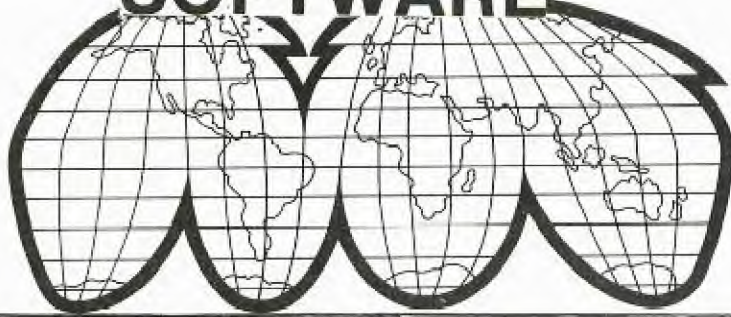
This will keep kids amused. Press any number to make the stickman dance. If you press zero the program ends. Basic only is required. At the moment, there is no music with it. Perhaps somebody out there would like to write some music for him to dance to.

```

10 CALL CLEAR
20 PRINT TAB(8);"STICKMAN":
: : :TAB(3);"BY CHICK DE MAR
TA"
30 PRINT : : : : : "PRESS A
NY NUMBER TO MOVE" : "STICKM
AN'S ARMS OR LEGS"
40 PRINT : : "PRESS 0(ZERO) T
O QUIT" : : :
50 FOR DX=1 TO 600
60 NEXT DX
70 CALL CLEAR
80 CALL SCREEN(11)
90 CALL COLOR(1,2,1)
100 CALL COLOR(8,1,1)
110 CALL COLOR(9,1,1)
120 CALL COLOR(10,1,1)
130 CALL COLOR(11,1,1)
140 CALL COLOR(12,1,1)
150 CALL COLOR(13,1,1)
160 CALL CHAR(34,"01071F3F3F
7F7FFF")
170 CALL CHAR(35,"80E0F8FCFC
FEFEFF")
180 CALL CHAR(36,"FFFEFEFCFC
F8E080")
190 CALL CHAR(37,"FF7F7F3F3F
1F0701")
200 $$="FFFFFFFFFFFFFFFF"
210 CALL CHAR(38,$$)
220 CALL CHAR(88,$$)
230 CALL CHAR(98,$$)
240 CALL CHAR(105,$$)
250 CALL CHAR(115,$$)
260 CALL CHAR(125,$$)
270 CALL CHAR(135,$$)
280 REM ***HEAD***
290 CALL VCHAR(6,16,38,4)
300 CALL VCHAR(7,15,38,3)
310 CALL VCHAR(6,15,34)
320 CALL VCHAR(6,17,35)
330 CALL VCHAR(8,15,37)
340 CALL VCHAR(8,17,36)
350 REM ***THE BODY***
360 CALL HCHAR(10,14,38,5)
370 CALL VCHAR(11,15,38,5)
380 CALL VCHAR(11,17,38,5)
390 CALL HCHAR(16,15,38,3)
400 REM **ARMS & LEGS **
410 A=4
420 B=28
430 FOR I=6 TO 9
    
```

CONTINUED on page 19

SOFTWARE



FROM TI HOME COMPUTER USER CLUB YORKSHIRE, in England.

Here is a program which may be of assistance to anyone learning a foreign language. It is in German but can easily be changed to French, Spanish, Latin, etc.

The user must feed in his own data, consisting of fifty words in English and the foreign language,

E.G.
490 DATA TABLE, DER TISCH
500 DATA WINDOW, DAS FENSTER
510 DATA ROOM, DAS ZIMMER
ETC

The program will then, each time it is run, ask any twenty of these words at random before ending the test and giving a final score and judgement.

The DATA statements can of course be amended at any time to suit the requirements of the user.

Note to German students: the Umlaut is replaced by an E after the relevant vowel. Hence TUER, HOEREN, BAER, ETC.

Hoping the program will make vocabulary-learning a little more effective and enjoyable.

Your Faithfully,
Derek Megginson.

```
100 CALL CLEAR
110 PRINT "WIR MACHEN JETZT
EINE PRUEFUNG":
: : : : :
120 Y=0
130 N=0
140 FOR D=1 TO 450
150 NEXT D
160 PRINT "WIE HEISST DU EIG
ENTLICH?": :
170 INPUT NAMES$
180 CALL CLEAR
190 PRINT "OKAY,";NAMES$;" FA
NGEN WIR AN ... "
200 FOR D=1 TO 700
210 NEXT D
220 CALL CLEAR
230 RANDOMIZE
240 DIM A$(50),B$(50)
250 FOR J=1 TO 50
260 READ A$(J),B$(J)
270 NEXT J
280 T=0
```

```
290 IF Y+N=20 THEN 990
300 S=INT(RND*50)+1
310 IF S=R THEN 300
320 R=S
330 PRINT "WIE HEISST ";A$(R
);" AUF DEUTSCH?": :
340 INPUT C$
350 IF C$=B$(R)THEN 400
360 T=T+1
370 IF T=2 THEN 430
380 PRINT : : "VERSUCH ES NOC
H MAL"
390 GOTO 340
400 PRINT : : "RICHTIG!": : :
:
410 Y=Y+1
420 GOTO 280
430 PRINT : : : :
440 PRINT NAMES$;" BIST DU JA
DUMM!": :
450 PRINT "ICH SAGE ES DIR..
..";A$(R);" HEISST ";B$(R)
460 N=N+1
470 PRINT : : : :
480 GOTO 280
490 REM
500 REM
510 REM
520 REM
530 REM
540 REM LINES 490 TO 980 ARE
DATA STATEMENTS
550 REM
560 REM
570 REM
580 REM
590 REM
990 CALL CLEAR
1000 PRINT ".....ENDE DER P
RUEFUNG.....": : :
1010 PRINT Y;"MAL RICHTIG"
1020 PRINT N;"MAL FALSCH";;
1030 PRINT Y>18 THEN 1080
1040 IF Y>14 THEN 1110
1050 PRINT NAMES$;" DAS IST G
AR NICHT GUT"
1060 PRINT : : "DU MUSST FLEI
SSIGER SEIN!"
1070 GOTO 1130
1080 PRINT "SEHRR GUT, ";NAM
E$
1090 PRINT : : "ICH GRATULIER
E!"
1100 GOTO 1130
1110 PRINTN"JA, DAS GEHT, ";
NAMES$
1120 PRINT : : "ABER GUT IST
ES NICHT!"
1130 FOR D=1 TO 2000
1140 NEXT D
1150 CALL CLEAR
1160 END
```

CONTINUED from page 18

```
440 CALL HCHAR(I,A+I,88)
450 CALL HCHAR(I,B-I,88)
460 NEXT I
470 CALL HCHAR(10,10,98,4)
480 CALL HCHAR(10,19,98,4)
490 CALL VCHAR(11,13,105,5)
500 CALL VCHAR(11,19,105,5)
510 CALL HCHAR(17,14,115)
520 CALL HCHAR(16,18,115,4)
530 CALL HCHAR(18,13,115)
540 CALL VCHAR(17,21,115,2)
550 CALL VCHAR(19,12,115,4)
560 CALL HCHAR(22,11,115)
570 CALL HCHAR(19,21,115,2)
580 CALL VCHAR(17,15,135,7)
590 CALL VCHAR(17,17,135,7)
600 CALL HCHAR(23,18,135)
610 CALL HCHAR(23,14,135)
620 CALL HCHAR(16,11,125,4)
630 CALL VCHAR(17,11,125,3)
640 CALL HCHAR(19,10,125)
650 CALL HCHAR(17,18,125)
660 CALL HCHAR(18,19,125)
670 CALL VCHAR(19,20,125,4)
680 CALL HCHAR(22,21,125)
690 REM **PROGRAM**
700 CALL KEY(0,K,S)
710 IF S=0 THEN 700
720 IF K-48=0 THEN 990
730 ON K-48 GOTO 750,770,790
,820,850,880,910,940,970
740 ON ERROR GOTO 700
750 CALL SCREEN(6)
760 GOTO 700
770 CALL SCREEN(14)
780 GOTO 700
790 GOSUB 1070
800 CALL COLOR(8,2,1)
810 GOTO 700
820 GOSUB 1070
830 CALL COLOR(9,2,1)
840 GOTO 700
850 GOSUB 1070
860 CALL COLOR(10,2,1)
870 GOTO 700
880 GOSUB 1110
890 CALL COLOR(11,2,1)
900 GOTO 700
910 GOSUB 1110
920 CALL COLOR(12,2,1)
930 GOTO 700
940 GOSUB 1110
950 CALL COLOR(13,2,1)
960 GOTO 700
970 GOSUB 1150
980 GOTO 700
990 PRINT "THE END"
1000 FOR ROLL=1 TO 4
1010 PRINT
1020 NEXT ROLL
1030 FOR DX=1 TO 900
1040 NEXT DX
1050 CALL CLEAR
1060 END
1070 FOR I=8 TO 10
1080 CALL COLOR(I,1,1)
1090 NEXT I
1100 RETURN
1110 FOR I=11 TO 13
1120 CALL COLOR(I,1,1)
1130 NEXT I
1140 RETURN
1150 FOR I=1 TO 6
1160 CALL COLOR(1,7,1)
1170 FOR DX=1 TO 50
1180 NEXT DX
1190 CALL COLOR(1,2,1)
1200 FOR DX=1 TO 50
1210 NEXT DX
1220 NEXT I
1230 RETURN
```



SOFTWARE

REVIEW

"TANGO INDIA NINER NINER FOUR ALPHA CALLING TOWER - MAYDAY"

Have you ever wanted to experience the joy of flying as only a pilot can, or perhaps you are a private pilot who has difficulty finding the cash to spend on flying time needed to keep your licence current and your skills from getting rusty. Well hold on to the seat of your pants cause Dow Aircraft Corp has a set of wings that fit into the console of your 99'er and provide the thrill of real time flying.

The aircraft-er-program comes with a handbook that has all the spec's of the aircrafts performance, and theres a section on the basics of flying for the novice pilot. When you run the program a menu is displayed which shows the following procedures:-

1. TAKE OFF
2. IN FLIGHT
3. LANDING
4. SHORT FIELD LANDING
5. I.L.S APPROACH

Each of these is well covered in the handbook. The first two are simple enough to perform, but the rest require a lot of skill in judgement and timing to successfully land the aircraft in one piece. Even if you are a pilot you may find difficulty with these as I did at first (perhaps I needed an endorsement on this aircraft model).

The solution I found was a lot of practice and a familiarity with the handbook instructions. If you have the misfortune of crashing you'll find the sound effects very dramatic.

This is followed by an accurate report on the aircrafts attitude at impact with the ground or the reason for your failure at the I.L.S. approach, or the cause of break up while flying maneuvers.

After you select your choice from the menu, you specify wind and turbulence (chop) strength, which can be from none to severe.

Your monitor displays all the cockpit instruments of a single engine aircraft reasonably well considering this program is in ordinary basic. The pointers are depicted by dots and these can be difficult to follow at times as the dials are not numbered.

The manual does specify the range covered by each instrument, but this can be hard to remember at times when you are flying under stress and trying to scan several instruments, as indeed you must sometimes do such as when making an instrument approach using the radio navigational aids. This is the only criticism I make of this otherwise superb program. I was amazed at the attention to details of this program.

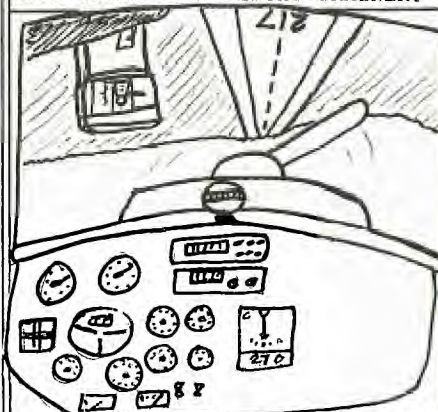
The aircraft has a trim adjustment so that you can set your flying speed and engine rev's can be controlled so that you can make a safe touchdown by reducing your rate of descent which must be less than 300 feet per minute for landing. Yes of course imperial measures are used throughout.

Console keys A to L are used to select various modes or to alter aircraft instruments and controls, and the joystick is used in the usual way to control aircraft attitude. Joystick effectiveness (or stick force) can be altered with keys 1 to 9, and if you get in a jam, unlike with a real aircraft, this one can be stopped and suspended in time while you decide what to do, or have a read of the manual.

This is also handy if you need to need to have a coffee break, or visitors interrupt a flight.

The manual also covers some advanced pilot procedures and challenges which you can try when you are reasonably confident and capable. There are diagrams that help you understand some procedures.

This program offers a tremendous challenge, and if you are up to that challenge you will never get bored with it. The variety is endless. You do not need to exit one type of procedure to try another, as you can fly your way through several different ones. For example you can do touch-and-go circuits around the airport, and then carry on into a navigational flight. A word of warning here, extensive flying can cause pilot fatigue. So if you like the idea of being a pilot this program is a must. Its called DOW FLIGHT TRAINER.



"I'M CENTRED ON THE GLIDESLOPE AND ABOUT TO TOUCH DOWN..... SO WHAT'S THE PROBLEM, TOWER!"

The other offer is for anyone wishing to order the "GRAPHICS CODE GENERATOR"; a product of SOFTWARE CAROUSEL.

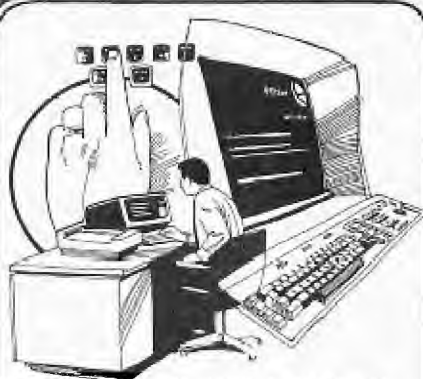
This prize-winning program has been demonstrated at club meetings, in Cin-Day User Grp, for those wishing to more easily incorporate dramatic graphics into their programming. Use of the GENERATOR requires a TI 99/4A, Extended Basic, and either a cassette recorder or a disk drive.

The prices for ordering this fine utility are as follows: Cassette-\$18.45, Cassette Demo Tape-\$22.45, Diskette-\$21.45, Diskette Demo Tape-\$25.45, Demo Tape Only-\$4.00.

To place your orders: Please send your Cheques, for the appropriate amount, payable to Mary Norton, 3536 Oakmeadow Ln, Cincinnati, OHIO, 45239.

Use an International Bank Cheque for the above amounts in U.S.DOLLARS, plus a couple of dollars extra for postage.

We extend greetings to our friends at the CIN-DAY USER GROUP from TI.S.H.U.G.



WE ALL LIKE TO GIVE A LIFT TO THE APPEARANCE OF OUR PROGRAM INTRO AND ONE METHOD IS RAINBOW WRITING.

THAT IS MULTI-COLORED LETTERING TO DO THIS IS VERY EASY. AT THE BEGINNING OF YOUR PROGRAM INSERT THIS PROGRAM.

```
10 CALL COLOR(5,5,1)
20 CALL COLOR(6,7,1)
30 CALL COLOR(7,11,1)
40 CALL COLOR(8,13,1)
OF COURSE YOU MIGHT WANT TO RESET THE COLORS THIS IS DONE BY CALLING EACH COLOUR BACK TO ITS ORIGINAL SETTING LIKE THIS.
LINE NO, CALL COLOR(5,2,1)
ANOTHER ITEM FOR NEW COMERS IS HOW TO EASILY MAKE SHAPES IN BLOCK FORM.
TO MAKE AN OBLONG SHAPE TO REPRESENT A CITY BUILDING TRY THE FOLLOWING EXAMPLES.
10 FOR X=1 TO 10
20 CALL HCHAR(24-X,2,6)
30 CALL HCHAR(24-1,22+X,12-2)
50 NEXT X
CALL CLEAR
FOR X=1 TO 10
CALL VCHAR(8,0+X,42,16)
CALL VCHAR(11,14+X,42,13)
CALL HCHAR(11-X,10+X,42,20-2*X)
NEXT X
```



REVIEW with RAY

It's always good to review a local piece of software and this one is the first from ASHWARE.

This program is a game, "THE RAINBOW PYRAMID". The aim is simple, to move a little green man from bottom centre of the screen to the centre of a spaceship at the top of the screen.

A snap, er, but there is a catch, isn't there always!

First a swim through a crocodile infested moat then a squeeze between the dreaded raidants & fly up past the guards evading the falling rocks.

Once at the top enter the correct spaceship, which changes at random from game to game, and score your points.

Of course if it is the wrong one back you go again. It is always the same spaceship, for the duration of the game.

The guards will hold you or throw you off, the rocks drag you down, one snap from the crocs will send you back and the dreaded radiant aura is impassable.

Cheating is to no avail, going off the pyramid and trying to sneak in the back way will only make you start again.

If this wasn't bad enough the pyramid is haunted by an invisible ghost who will, without warning, throw your man off the pyramid, very disconcerting.

Also the slower you score the more he strikes. At the top you enter the spaceship and once at the centre of it you score points, then your start again.

You do have a friend PROTYP who was also on the ship. He was captured and escaped however, he is trapped on the pyramid.

Protyp is shapeless and can be anything, when you bump into him he gives the player 200 points.

It is a very colourful game and something is happening all over the screen, the joystick control is excellent.

There is a choice of levels to start from an easy level which need only be played if wanted.

One item that particularly impressed my young visitors was the means of changing levels.

On the second level, a purple and gold door appears as you move to the next level it looked very good.

To change levels how ever you must reach at least 1000 points.

On the whole a very good game with excellent graphics, cost \$15.

The program runs in extended basic on a standard console with joysticks. And now, here are the instructions to ...

"THE RAINBOW PYRAMID" By John Ashmore

You are an explorer who has crashed his spaceship on a strange world. The natives have stolen your ship and

placed it on top of a pyramid.

To deceive you they have copied it and placed the copy on the pyramid, as well, there are guards on the pyramid who will stop and throw you off.

Your task is to find the real ship and fuel it. This is done by taking the water from the moat and leaving it in the ship, automatically fueling the ship.

Swimming through the moat soaking up water and avoiding the crocodiles. Fly between the golden radiants, move up the pyramid and avoid the rocks. When you arrive at the top, line yourself up with the entrance to the spaceship, then move until you cover the man inside the ship. When you do, the water will automatically fuel the ship, you will score 100 points and start again. Of course you must pick the right ship or you will be sent back to the start again.

There are Four Levels. To move from level to level you must get at least 1000 points where upon a door will appear in the middle of the pyramid. Go through the door and you will appear on the next level. The pyramid is haunted by an invisible ghost who will stop you sometimes. The slower you are to score the more he will strike.

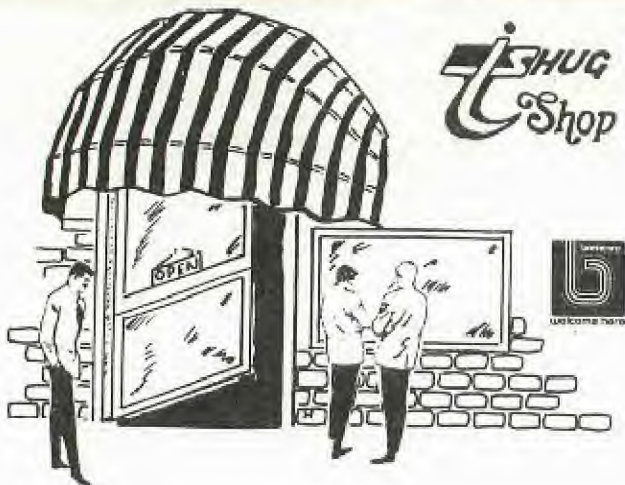
However, you have a friend, PROTYP, who was also on your ship when it crashed. He was captured by the natives and escaped he is now trapped on the pyramid but because he can take any shape neither you or the guards can see him.

If you meet PROTYP he will reward you with 200 points the magic door appears and time stands still until you go through the door.

On the first level, for every count you get three turns and locating the man in the spaceship is easy. The second level is a little harder.

On the third level, the background changes to white and all that can be seen of the guards is their feet or hands.

Level points are scored bottom right, progressive level score, upper right. Game Ends when you have received the max points on the fourth level.



Product News

BEST OF 99'er - A REVIEW

Having a personal collection of all the early issues of the old 99'er Magazine you could say that there is nothing in the Best of 99'er for me. To a certain extent you would be right, BUT I found when reading through it that it is far better set out than the magazines, the programme listings are easier to read, hence the less likelihood of errors at the keyboard and of course it is all together which saves you flicking through 6 magazines looking for that elusive article.

The Best of 99'er is set out in 8 chapters, Starting Out, Programming Techniques and Languages, Inside Basic and Extended Basic, Logo, Assembly Language, Computer Assisted Instruction, Computer Gaming and Utilities. In each of these chapters there is something for everyone. For instance in Starting Out there is a 4 page article entitled "A Beginners Guide to Cassette Operation With a Home Computer". This article provides a wealth of detail which is sure to answer all the problems that are bound to crop-up. Similarly in Chapter 6, Computer Assisted Instruction there is an excellent article entitled "Almost everything you ever wanted to know about music... But were afraid to ask". This article even taught me a bit about music and, bear in mind that I'm not skilled at all on the subject.

Page after page of useful information is in this book, and I for one wouldn't be without it. Thoroughly and very highly recommended.
TERRY.



CLASSIFIED ADS.

TI INVADERS, AND TOMBSTONE CITY...In perfect condition. \$20 each.
Please contact Philip on (045)781429 after 4pm.

CHISHOLM TRAIL, PERCENTS AND FRACTIONS, all AS NEW \$20.00 EACH
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New items available from the TISHUG Shop include the following :

TI-FORTH - Diskette and reference manual - \$30.00. Please note that a full system configuration and the Editor Assembler Module are required to operate TI-FORTH.

PROGRAMS FOR THE TI COMPUTER - \$20 - a book containing over 40 programmes to type in. Some of the titles are Alligator Alley, Charades, Personal Banking, Mail Writer, Metric Converter, Disk Lister and a huge adventure entitled Adventure in Oz. By buying this book in bulk, TISHUG is able to offer it to members at a cost of only \$20. The book is thoroughly recommended.

INTRODUCTION TO ASSEMBLY - \$21 - this book is also highly recommended for those into Assembly Language. The 11 chapters include Addressing, Registers, Coding, Assembling and Running a Program and File Handling. Two sample programs to type in are also included.

BEST OF 99'er - \$25 - yes the initial order finally arrived and we have at least 20 very happy people. This book is probably the best \$25 investment any TI owner can make. Another 40 copies have been ordered and hopefully will arrive in about 6 weeks time. Depending on air-freight costs it is hoped to sell still for \$25.

WIDGETS - \$39.95 - all but 3 of the 20 ordered have been reserved. First in gets them.

SMART PROGRAMMING GUIDE - \$8 - 20 more copies have arrived from the publisher.

HOME COMPUTER MAGAZINE - there is still no word as to when Volume 4 Issue 2 will arrive. Our standing order for HCM has been increased to 100 copies and hopefully we will still be able to sell for \$8.

THIRD PARTY SOFTWARE - TISHUG has entered into licencing agreements with American Software Companies and will shortly be selling software to members. Some titles include Void, Spritemaker, Heist, Sneaky Snake, Wallaby and Horrors. More details of this will be included in a later column. It is hoped to demonstrate some of this Software at the July meeting.

THIS MONTHS SOFTWARE - Owing to popular request is another Educational tape/disk. Education Volume 1 No. 2 contains the following programmes - Color Fractions, Color Math, Elements, Fireball, Hare-n-Tortoise, Australia Quiz, Spell Down and World Birds.

PREVIOUS SOFTWARE - all previous issued tapes are still available with the exception of Home Use No. 1. Unfortunately a couple of the programmes on the tape require a 32K system to run. A new Home Use tape is currently in the planning stage. REMEMBER all tapes are \$3 each at meetings or \$4 each by mail. Disks are \$6 each at meetings or \$7 by mail.

BOXES OF DISKS - now \$34 for a box of 10. Memorex has given TISHUG a better deal so we are able to reduce the price by one dollar.

See you at the SHOP.

Sydney News Digest

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