THE GUILFORD 99'ER NEWSLETTER

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The Guilford 99'er Users' Group Newsletter is free to dues paying members (One copy per family, please). Dues are $12.00 per family, per year. Send check to 3202 Canterbury Dr., Greensboro, NC 27408. The Software Library is for dues paying members only. (Herman Geschwind, Editor)

OUR NEXT MEETING

DATE: September 1, 1987. TIME: 7:30 PM PLACE: Glenwood Recreation Center 2010 S. Chapman Street.

For our September meeting we will have a "show and tell" session on MultiPlan. Have your questions ready.....

PRES PEEKS

For those of you who were not able to make the August meeting, all I can say is, if you are interested in some of the modifications that are being made to the old Black and Silver you should have been there. My thanks go to George McCormick for his efforts and demo of the 32K modification, to Bob Carmany for saving the program by getting a resistor pack, and also John Willforth from Pennsylvania for supplying us with his unit and going to the trouble to send it express-fast mail overnight so we could make the meeting deadline. Thanks Guys.

A few weeks ago, I was reading through PUG and came across the article by John Willforth pertaining to inserting the extended basic unit inside the console. As I had a surplus EXB, I thought this might be an interesting project to try. I had never had the nerve to open my original EXB cartridge for fear of static charges or something else, but since I had another, I opened it up. It was really nothing to be afraid of for there is just a card inside with a few chips, resistors, and capacitors. I compared it to John's drawing and there seemed to be no margin for error if I followed his instructions. I had everything I needed except I had never seen a drawing of the pin-out of the Gram Port. For some reason, I figured it would wire across the top from left to right and then skip down to the bottom and again go left to right. WRONG!!

I very carefully wired all the pins in the order I just mentioned and plugged it in. I did not put the console back together as I wanted to make sure as John suggested in his article, that Size and Accept At would work. When I cut the computer on, I thought I invented some kind of new machine language!! What a mess of jumble I got on that screen! I knew something was amiss so I came back in the house and called Penn. information. I finally got John's telephone number from a nice AT lady and gave him a call.

As a rule, when you need to speak to someone in a hurry, you can never find them, but John answered right away. I told him what kind of trouble I was having and how I had wired the port. He informed me that he had printed a pin-out of the gram port some issues back and told me how it was wired. We talked awhile and when I hung up, I headed back to the shop to try the new way of hook up.

After re-wiring the pins and fingers on the board, I laid my completed board on top of the RF shield, plugged in a spare keyboard and cut on my computer. Oh boy, there it was..#1 for basic, #2 for extended basic. I was elated to say the least and I typed in Size. It worked. Then I typed in Accept at (12,1):A$. When I hit enter, there was the cursor flashing where it was supposed to flash, but wait..it just locked up! I placed my finger on top of a chip and the flashing started again. I took my finger off and it locked up again. I could cut the computer off for a minute and then cut it back on and it would act normal in EXB. In a few seconds, it would lock up again. It had to be RF coming from the CPU as it warmed up. I wrapped my wiring in foil tape and the trouble vanished immediately.

John had told me he would give me a follow up call later which he did. I told him the trouble I had and how I corrected it and I figure he must have thought "what a dummy" for really, I should have put the console back together before I tried it the first time and I probably would have had no trouble with lock-up. Anyhow, I got to meet, over the wire at least, one nice guy. John has proved to me that he knows quite a bit about the TI and it's innards. There isn't many guys who would remove a piece of their own equipment and go to all the trouble to express mail it a few hundred miles to someone he didn't know from Adam. Don't say anything bad about John Millforth around me!!

It seem strange now typing in EXB with nothing in the port. I have used it a week now and no problems. John sent the drawing for also putting the Speech inside along with the 32K. I don't know whether I will put speech in the console or wait for John's card for the P-Box to come out and put the speech in the P-Box. I think that would be better. The card will have many uses, such as a clock, and I understand it can also be used for options with the Geneve.

Bob has given a lot of his time to the club by trying to keep up his Forth column and also the TI Shopper. He gave me a call recently, an informed me that his time just didn't allow him to do both columns, so I will try to incorporate the Shopper news in with my column and relieve Bob a little. I would like to thank Bob for his time that is being given the club along with Larry and Herman. I just wish more of the members would take part in the running of the Newsletter. Just a few items of interest wouldn't take long and the other members could get some ideas just reading your articles.

As you know, Christmas will soon be here. The way time is flying by it will be here before you know it, so now is the time for you music and graphics writers to be starting some good programs for Christmas.

There doesn't seem to be too much interest in the library lately. However, as I haven't seen or heard from the Librarian in three or four months, that could have something to do with it. How 'bout it Robert, come and see us once in a while, we miss seeing you. We have quite a few programs and it must be that everyone has everything, or just don't want anything we have to offer. I read in a lot of the newsletters that we receive, that their clubs charge from a dollar upwards to three dollars for disks from their library. As we do not charge the members, something is missing somewhere!

I hope none of you have to return anything you order but in case you do, let me put you wise to something that happened recently. I ordered a disk holder from Tenex and when it came, the lid was cracked all the way from top to bottom. I called and they said to send it back and it would be replaced. I'm no piker, but I don't have a lot of money to hand out either, so I asked if they would handle the return postage. Nope, I had to. I called UPS and was told that they would pick it up and send it back free! How bout that! So now Tenex will have to ship it back to me at their expense, as it should be. I didn't break it!

The new DAK catalog came today and I was told the owner, Drew Kaplan, is the brother of the infamous Kaplan that ripped us off on Home Computer Magazine. I couldn't order anything from that catalog if I had all the money I could tote!! I don't know, but DAK must have got the TI list from his brother.

The door prize this month was the club copy of MICROpendium. It was won by Carl Foster. Nice going Carl. Carl was also nice enough to see that the Newsletter was printed for us for the August mailing. Thanks Buddy.

After getting the new Computer Shopper this month, I decided to try the MEI/MICRO disks that they are selling for .25 cents each. You have to order 200, but with my little Grandson now the proud owner of a P-Box and disk drive, I guess i'll wind up with only a 100! I have never used any of those disks, but since I have retired and no longer have the free sources that I did, I guess the cheap ones are the right ones for me. They seem to be the same disks that I have been using. I was told that they were thin, but not to me.

By the way, any of you with printers that need paper...Pace Warehouse has the good stuff 2500 sheets for $15. and tax. There's one catch...you must be a member and the Lady informed me that membership is $20. Once you join there is a multitude of items that you may buy wholesale, including groceries. There are a few salvage houses that sell paper pretty cheap when

ey can get it, but I left my name and telephone number with one and told him to call collect when he got some and I have never heard from him again.

For any Tunnels Of Doom freaks out there, Asgard Software is offering five games packed on one SS/SD disk for $7.95 + .75 S&H. They can be reached at Asgard Software, box 10306, Rockville, MD 20850. For Donkey Kong type game lovers, there is a new game out called Junkman Junior. Put out by DataBioTics Inc., P.O. Box 1194, Palos Verdes Estates, CA 90274, it sells for $16.95. It will soon be out in module so I am told.

That's about all that's new over this way for now. I will keep you posted as new products and utilities come along.

HORIZON256

Edited by Kevin Kapus, Front Range 99ers, for use with HORIZON SOURCE CODE VER_04

The HORIZON RAMDISK is available in 90K SSSD (360 SECTOR) and 180K DSSD (720 SECTOR) sizes. This project expands the size to 256K (976 SECTORS) for an increase in storage capacity of 64K (256 SECTORS) or 35.5%. This increase is accomplished by adding one 74LS154 (4 to 16 DECODER), one 74LS02 (NOR GATE), and eight 8K 6264LP-15 STATIC RAM chips, removing one 74LS138 (3 to 8 DECODER) chip, and modifying the DSR CODE to recognize the existence of the added memory. The original HORIZON RAMDISK CIRCUIT does not fully decode one of the five memory address lines from U9 limiting it to 180 K. By fully decoding this line we pick up eight more CHIP SELECT SIGNALS bringing us up to 256K (976 SECTORS). This utilizes the original design to its fullest potential with only a few SIMPLE MODIFICATIONS.

::

CAUTION: THIS MODIFICATION IS UNDERTAKEN AT YOUR OWN RISK AND MAY VOID YOUR HORIZON WARRANTY

::

CAUTION: REMOVE THE NICAD BATTERIES FROM THE RAMDISK BEFORE STARTING. USE CARE WHEN HANDLING THE RAM CHIPS TO AVOID DAMAGE FROM STATIC.

::

1. Remove U1, the original 3 TO 8 DECODER CHIP, from its socket an DISCARD.
2. Remove the EIGHT PIGGYBACKED PAIRS of 8K RAM CHIPS from their sockets U3-U6 and U12-U15.
3. Remove U2, the original 4 TO 16 DECODER, from its socket.
4. Remove U10, the original NOR GATE, from its socket.
5. Install a THIRD ADDITIONAL 8K RAM CHIP PIGGYBACKED on top of the removed PIGGYBACKED PAIRS of 8K RAM CHIPS connecting EACH PIN to its CORRESPONDING PIN below with the EXCEPTION of PIN 20 (CHIP SELECT). BEND PIN 20 outward like PIN 20 on the CHIP below it. Reinstall these EIGHT PIGGYBACKED TRIOS into their sockets (U3-U6 and U12-U13) and RECONNECT the ORIGINAL lines from PIN 20 of the CENTER CHIPS to their ORIGINAL POINT on the EXPANSION JACK next to U3.
6. Install the ADDITIONAL 4 TO 16 DECODER CHIP (74LS154) PIGGYBACKED on top of the ORIGINAL 4 TO 16 DECODER CHIP, U2. Connect PIN 12 and PINS 20 THRU 24 to their corresponding PINS below. Bend PINS 1 THRU 11 and PINS 13 THRU 19 OUTWARD. Reinstall the PIGGYBACK PAIR of 4 TO 16 DECODERS in its U2 socket. Connect lines from the UPPER CHIP PINS 1 THRU 8 as follows:

PIN 1 TO U1 SOCKET PIN 15.
PIN 2 TO U1 SOCKET PIN 14.
PIN 3 TO U1 SOCKET PIN 13.
PIN 4 TO U1 SOCKET PIN 12.
PIN 5 TO U1 SOCKET PIN 11.
PIN 6 TO U1 SOCKET PIN 10.
PIN 7 TO U1 SOCKET PIN 9.
PIN 8 TO U1 SOCKET PIN 7.

These provide the CHIP SELECT SIGNALS to the ORIGINAL (CENTER LAYER) of 8K RAM CHIPS.

Connect lines from the UPPER CHIP PINS 9 THRU 11 and 13 THRU 17 as follows:

PIN 9 TO PIN 20 U3 TOP 8K CHIP.
PIN 10 TO PIN 20 U4 TOP 8K CHIP.
PIN 11 TO PIN 20 U5 TOP 8K CHIP.
PIN 13 TO PIN 20 U6 TOP 8K CHIP.
PIN 14 TO PIN 20 U12 TOP 8K CHIP.
PIN 15 TO PIN 20 U13 TOP 8K CHIP.
PIN 16 TO PIN 20 U14 TOP 8K CHIP.
PIN 17 TO PIN 20 U15 TOP 8K CHIP.

These provide the CHIP SELECT SIGNALS to the ADDITIONAL EIGHT 8K RAM CHIPS (TOP LAYER).

7. Install a new NOR GATE (74LS02) PIGGYBACKED on top of the ORIGINAL NOR GATE, U10. Connect PINS 2, 7, and 14 to the CORRESPONDING PINS below. BEND PINS 1, 3 THRU 6, and 8 THRU 13 outward. Reinstall the PIGGYBACKED PAIR or NOR GATES in its U10 socket. Connect LINES from the UPPER CHIP as follows:

PIN 1 TO PINS 18 AND 19 U2 UPPER CHIP.

PIN 3 TO U1 SOCKET PIN 6.

These provide the CHIP SELECT SIGNAL for U2 UPPER 4 TO 16 DECODER CHIP thus fully decoding the available MEMORY ADDRESS LINES.

PINS 4 THRU 6 and PINS 8 THRU 13 of the UPPER NOR GATE U10 are not used and are left NOT connected. They may be used in future modifications.

This completes the HARDWARE modifications to the RAMDISK CARD. Next the DSR SOFTWARE must be modified so that this ADDITIONAL MEMORY can be accessed.

##

Software Modifications updated to Ver_04 by Kevin Kapus

The original DSR CODE, CALL SUBPROGRAMS, ETC. are located in RACKS 90-92 at the top of the RAMDISK MEMORY MAP. The MODIFIED RAMDISK MEMORY MAP now extends to RACK 124 and the DSR must be moved to the new top, in RACKS 122-124.

NOTE: IF THE CODE IS NOT MOVED IT WILL BE ERASED WHEN THE RAMDISK IS INITIALIZED TO MORE THAN 720 SECTORS.

The changes to the CODE consist of changing ALL REFERENCES for the three upper 2K blocks of memory to a NEW LOCATION, changing the LOADER PROGRAMS to LOAD the NEW CODE at the NEW LOCATION, changing the MAX SECTOR CALL, and MAX SECTOR CALL, and modifying the FORMAT ROUTINE of the DSR.

Luckily, this is much EASIER than it might appear since the SOURCE CODE for the HORIZON RAMDISK was provided with the KIT and is very well Documented!

The following PROGRAMS will need to be modified and then REASSEMBLED with the EDITOR-ASSEMBLER. CALL/S, CREATE/S, LOADER/S, PARTA, SVXB/S, and XB/S.

1. CALL/S

Change "CI R2,1441" to "CI R2,977" at LABEL MAX02.

2. LOADER/S

Change "DATA >BB00" to "DATA >FB00" at LABEL LINK.

Change "BYTE >BB" to "BYTE >FB" at LABEL MXL1.

Change "BYTE >BD" to "BYTE >FD" at LABEL MXL2.

Change "BYTE >BF" to "BYTE >FF" at LABEL MXL3.

3. PARTA

Change "DATA 720" to "DATA 976" at LABEL MAXSEC.

Change "DATA 720" to "DATA 976" at LABEL FORSEC.

Change "DATA >BB00" to "DATA FB00" at LABEL LINK1.

Change "DATA >BD00" to "DATA FD00" at LABEL LINK2.

Change "DATA >BF00" to "DATA FF00" at Label LINK3.

Add the LINES "C R8,@MAXSEC" and "JEQ FFDONE" after the LINE "INC R8" (fourth LINE after LABEL FMTLP1.) Add the LINE "FFDONE MOV R8,R3" after the LINE "JNE FMTLP0" (sixth LINE after LABEL FMTLP1.)

4. SVXB/S

CHANGE "LI R1,>BF00" TO "LI R1>FF00" (FOURTH LINE after LABEL SVXB.)

5. XB/S

CHANGE "CI R2,1441" to "CI R2,977" at LABEL MAX02.

Reassemble CALL/S, LOADER/S, SVXB/S and XB/S to create NEW OBJECT FILES. ASSEMBLE the ORIGINAL FILES "CHAR/S" and "DOWNLD/S" from the HORIZON SOURCE DISK.

Type in the following program with the Editor Assembler:

```
COPY "DSK1.PARTA"
COPY "DSK1.PARTB"
COPY "DSK1.PARTC"
COPY "DSK1.PARTD"
COPY "DSK1.PARTE"
```

Assemble this file, use DSR256 as the object file, with the R option.

Next RUN the "LOADER" program assembled from "LOADER/S" to LOAD the following:

"DSR256" into BLOCK 1.

"CALL" from the assembled FILE "CALL/S into BLOCK2.

"CHAR" from the assembled FILE "CHAR/S" into BLOCK 3.

"DOWNLD" from the assembled FILE "DOWNLD/S" into BLOCK 3.

Now RUN this BASIC program:

```
100 CALL INIT
```

```
110 CALL LOAD("DSK1.IB")
120 CALL LOAD("DSK1.SVXB")
130 CALL LINK("SVXB")
140 END
```

NOTE: The RAMDISK MUST be set CRU 1000 for the SVXB program to work as it does NOT search for the HORIZON CARD CRU like the other programs do., If you have another CARD at CRU 1000 (like the MYARC 128K or 512 K CARD) you can change the sixth LINE of the "SVXB/S" FILE from the "LI R12,1000" to "LI R12,(CRU of your HORIZON CARD)".

The modified DSR CODE, CALL SUBPROGRAMS ETC. are now LOADED in their NEW locations in RACKS 122 THRU 124.

This completes the DSR modifications. All functions of the HORIZON RAMDISK will function as they did originally but now being able to UTILIZE 976 SECTORS (256K).

Editors Note: The VER_04 MEMTEST I have will not work. Use Disk Manger II's comprehensive test to check your upgraded ramdisk.

When formatting the 976 SECTOR RAMDISK will show "974 SECTORS FREE" and "466 SECTORS USED". This is because the DISKMANAGER is trying to format 1440 SECTORS and reads 466 USED during SECTOR VERIFICATION. This does not affect RAMDISK OPERATION in any way, but it can be corrected to show "974 SECTORS FREE" and "2 SECTORS USED" by changing BYTES 10 and 11 of SECTOR 0 from >05A0 to >03D0. The following program is used to correct the SECTORS FORMATTED number.

```
DEF START
SECTOR DATA >03D0
START LI R12,>1000 (CRU OF YOUR CARD)
LI R1,7
SWPB R1
LDCR R1,8
MOV @SECTOR,@>5A0A
SBZ 0
RT
END START
```

This completes the HORIZON RAMDISK 256K EXPANSION PROJECT for VER_04.

If you have questions concerning this expansion project you can send them to Kevin Kapus, 1026 Norwood Ave., Colorado Springs CO 80906, or phone (303) 576-3199 or contact Edward A. Hallett, 5600 S. Countryclub #64, Tucson AZ 85706. Phone (602) 889-6930.

FORTH FORUM

Let's start this month's column with a couple of screens of Wycove Forth material. Actually, these words (and procedures) have appeared before in an article that I wrote for MICROpendium. However, they make loading screens so much more convenient that they are worth a second look. The first thing that you have to do is to put an application menu on the first screen of each of your Wycove Forth disks. These two screens will read it, and allow you to load your selected application either by name (ie. MLOAD name) or by screen number (ie. 14 LOAD). The application menu is constructed like this:

```
SCR. #1
0 PRINTER 7
1 FLOATING-POINT 9
2 SPRITES 4
etc.
```

Now, for the screens themselves that can be used to display and load your menu screen applications:

```
SCR. #2
0 ( MLOAD - load from directory menu )
1 63 -LOAD COMP$ \ Or any other screen
2 : MLOAD ( MLOAD name -- ; menu load
3 BL WORD IN @ BLK @
4 HERE COUNT
5 40 IN ! 1 BLK !
6 SWAP OVER PAD SWAP MOVE PAD SWAP
7 BEGIN
8 OVER OVER
9 BL WORD HERE COUNT
```

```
 10 OVER C@ WHILE
 11 COMP$ 0=
 12 BL WORD
 13 IF
 14 BASE @ HERE
 15 DECIMAL NUMBER ROT BASE
 16 DROP LOAD
 17 DROP DROP BLK ! IN ! ;S
 18 ENDIF
 19 REPEAT DROP DROP DROP DROP
 20 TYPE ." ? not found.  "
 21 BLK ! IN ! ;
 22
 23 -->
 24
 25

 SCR.  #3
 0 ( Menu Words )
 1 ( MENU re-opens the screens file to
 2 make switching disks easier, unless
 3 screen 1 has been edited )
 4
 5
 6 : MENU ( -- : generate menu )
 7 R/W-CLOSE CR
 8 1 BLOCK 2- DUP @ 0>
 9 IF 0 SWAP ! ELSE DROP ENDIF
 10 IN @ BLK @ 40 IN ! 1 BLK !
 11 CR ." APPLICATION " 9 SPACES ." SCREEN"
 12 CR 26 0 DO ." -" LOOP
 13 BEGIN
 14 BL WORD HERE COUNT
 15 OVER C@ WHILE
 16 CR SWAP OVER TYPE
 17 24 SWAP - 1 MAX SPACES
 18 BL WORD HERE COUNT TYPE
 19 REPEAT DROP DROP
 20 CR BLK ! IN ! ;
 21
 22
 23
 24
 25
```

Now, here are some "generic" words that can be used in either TI-Forth or Wycove Forth. The first one writes an ASCII character as a constant.

```
 : ASCII ( C -- c )
 " IMMEDIATE "
 BL WORD HERE 1+ C@
 "COMPILE" LITERAL ;
 : SCOPY ( from+offset to+offset --- )
 SWAP BLOCK 2- ! UPDATE ;
```

And finally, here is a Wycove Forth screen that will list all of the devices that are attached when you execute it.

```
 SCR.  #4
 0 ( CRU access screen )
```

```
1
2 ( These words will enable the user to
3 list all of the ROM devices attached
4 to the computer )
5
6 : LIST-NAMES >4008 @ IF BEGIN
7 @ DUP 4 + CR COUNT TYPE DUP @ 0=
8 UNTIL
9 DROP ENDIF ;
10
11 : LIST-ROM >4000 C@ >AA = IF LIST-NAMES
12 ENDIF ;
13
14 : LIST-DEV 1 OVER !CRU
15 LIST-ROM
16 0 SWAP 1 !CRU ;
17
18 : DEVICES >F80 >800 DO I LIST-DEV >80
19 +LOOP ;
20
21
22
23
24
25
```

Well, folks, that about does it for this month. 'Til next month . . .

DISKSNOTE

Disk system users may be interested in what I gather is a new type of disk being marketed by BASF. The disk is double-notched, catering to flippy devotees who have the original TI disk drives that are single-side. I don't recall ever seeing the like in local stores. A double-notched double-sided disk, essentially saves you the bother of notching, but also now provides an enforceable warranty for both sides of a flippy.

The disks are certified and fully warranted for life. They may be available elsewhere, but I saw them at the BEST store. Believe they are about $5.98 for a pack of ten, which works out to 60 cents per disk, but 30 cents per side. Seems like a decent value, given the volume discounts being offered through some mail order houses.

However, a word of caution, frequently offered by Herman Geschwind of the Guildford 99ers: flipping a disk means you spin it in both directions instead of one and this means that any dirt removed by the internal cleaning pad could be spun free when turned in the opposite direction. (My understanding is that double-sided drives have two reading heads and the disk always runs in the same direction.) Although I've never experienced a problem, this could result in data loss. It is interesting though that at least one name brand manufacturer is willing to warrant mass-produced flippies. The warranty, of course, is limited to the disk, not any data lost.--submitted by Larry Spohn.

```
100 @=1
110 CALL CLEAR :: CALL SCREE
N(9):: PRINT "   99/4 SPEECH
 MODULE DEMO";;;;;;;;;;;;;;"
   PRESS ANY KEY TO START",,
;;;;;;;;;;:: A$="PRESS+ANY+K
EY+TO+START"
120 CALL SCREEN(13):: FOR A=
@ TO 2 :: GOSUB 250 :: FOR B
=2 TO 16 STEP 14 :: FOR C=2
TO 8
130 CALL COLOR(C,B,@):: IF D
=@ THEN 180
140 NEXT C :: FOR E=@ TO 35
:: GOSUB 890 :: IF D=@ THEN
180
150 NEXT E
160 NEXT B :: CALL SCREEN(9)
170 NEXT A :: GOTO 120
180 CALL CLEAR :: CALL SCREE
N(5):: CALL CHAR(96,"0000000
0FFFFFFFF"):: CALL CHAR(97,"
FFFFFFFF00000000"):: CALL CH
AR(98,"F0F0F0F0F0F0F0F0"):: 
CALL CHAR(99,"0F0F0F0F0F0F0F
0F")
190 CALL CHAR(124,"000039272
7390100"):: CALL CHAR(125,"0
000FF8FFFFFFF48"):: CALL CHA
R(126,"0000F0F8FCF8F080"):: 
CALL CHAR(127,"00010204"):: 
CALL CHAR(128,"88080808")
200 CALL CHAR(129,"40201008"
):: CALL CHAR(130,"0000FFFFF
FFFFF48")
210 CALL CHAR(131,"0000F0F8F
FF8F080")
220 CALL COLOR(9,13,14):: CA
LL CHAR(122,"00000000FF"):: 
CALL CHAR(104,"9A3E7B4D2A6E1
F3E"):: CALL CHAR(112,"FFFFF
FFFFFFFFFFF"):: CALL CHAR(11
3,"80C0E0F0F8FCFEFF")
230 CALL CHAR(114,"0103070F1
F3F7FFF"):: CALL CHAR(115,"F
F7F3F1F0F070301"):: CALL CHA
R(116,"FFFEFCF8F0E0C080"):: 
CALL CHAR(120,"FFFFFFFFFFFFF
FFF")
240 CALL CHAR(121,"0103070F1
F3F7FFF"):: CALL CHAR(122,"F
FFEFCF8F0E0C080"):: GOTO 260
250 CALL SAY(A$):: RETURN
260 A$="HELLO I+AM+FROM+@TEX
AS INSTRUMENTS@ I+AM+A HOME+
COMPUTER." :: GOSUB 250 :: A
$="BUT+IF+YOU+WANT U+CAN REF
ER+TO+ME+BY+NUMBER  I+AM+A T
+I+NINETY+NINE FOUR." :: GOS
UB 250 :: GOSUB 580
270 A$="I+HAVE+SOME+THINGS I
+WANT+YOU+TO+SEE." :: GOSUB
250 :: A$="ARE+YOU+ALL+@READ
Y TO START@." :: GOSUB 250 :
: CALL HCHAR(@,@,63,384):: A
$="CAN+U+HEAR+ME+O+K" :: GOS
UB 250
280 CALL HCHAR(13,@,63,384):
: A$="VERY GOOD,JUST+ONE+SEC
OND." :: GOSUB 250 :: CALL C
LEAR :: A$="I+NEED+TO CHECK+
OUT THIS+HERE T+V+SET+FIRST
JUST+TO+MAKE+SURE IT+IS+WORK
ING."
290 GOSUB 250 :: FOR C=@ TO
8 :: FOR E=15 TO 2 STEP -@ :
: CALL SCREEN(E)
300 NEXT E
310 NEXT C :: CALL SOUND(500
,110,3):: A$="O+NO+NOT+AGAIN
  I+AM+SORRY, THIS+T+V+SET 6
IVES+ME+PROBLEMS. I+GUESS WE
+JUST+DO+NOT GET+A1+LOW6." :
: GOSUB 250 :: FOR F=2 TO 8
320 CALL COLOR(F,2,@)
330 NEXT F
340 A$="THE SPEECH MODULE IS
 ALL WET " :: GOSUB 800 :: F
OR C=@ TO 24 STEP 2 :: E=3+A
BS(12-C):: CALL SCREEN(E)::
PRINT :: PRINT
350 NEXT C :: A$="SEE+WHAT+I
+MEAN" :: GOSUB 250 :: A$="I
+GUESS+I+MUST TRY+ONE+MORE+T
IME TO+GET+IT+TO+WORK. " ::
GOSUB 250 :: CALL CLEAR :: A
$="O+K, THE+SCREEN+SHOULD+BE
+BLUE RIGHT+NOW." :: GOSUB 2
50
360 CALL SCREEN(11):: A$="UH
OH" :: GOSUB 250 :: A$=". T+
V, @THAT IS INCORRECT@. YOUR
+SCREEN+IS+@SUPPOSED TO@+BE
BLUE RIGHT+NOW." :: GOSUB 25
0 :: CALL SCREEN(9)
370 PRINT "      SORRY, HOW'
S THIS?",,,,,,,,,,,,,,,,,,,,
:: A$="@NICE TRY@. NOW+TRY+A
GAIN AND+THIS+TIME GET+IT+RI
GHT." :: GOSUB 250 :: CALL C
LEAR :: CALL SCREEN(16)
380 CALL HCHAR(12,8,96,9):: 
CALL HCHAR(21,8,97,9):: CALL
 VCHAR(13,8,98,8):: CALL VCH
AR(13,16,99,8):: A$=" .  . M
HY+R+U+SO+SQUARE A1+A1+A1+A1
"
390 GOSUB 250 :: CALL COLOR(
10,2,@):: CALL HCHAR(@,@,104
,768):: A$=" . .  @WHAT WAS
THAT@." :: GOSUB 250 :: FOR
F=@ TO 200
400 NEXT F :: CALL CLEAR ::
CALL SCREEN(15):: A$="I+HAVE
+HAD ABOUT+ALL+I+CAN+TAKE FR
OM+U."
410 GOSUB 250 :: CALL CLEAR
:: PRINT "I AM WILLING TO TU
RN BLUE IFYOU APOLOGIZE AND
PROMISE TOBE NICE TO ME!",,,
,,,,,,,,,,,,,,,,,,,,,:: A$=
" . I+WILL+NOT" :: GOSUB 250
 :: CALL SCREEN(2)
420 A$=" . . . O+K.@YOU WIN@
. I AM SORRY. I+WILL+NOT BE+
MEAN+TO+YOU+AGAIN" :: GOSUB
250 :: CALL CLEAR :: PRINT "
     NOT SINCERE ENOUGH.",,,
,,,,,,,,,,,,,,,,,,,,:: FOR F
=2 TO 8
430 CALL COLOR(F,16,@):: FOR
 G=@ TO 80
440 NEXT G
450 NEXT F :: A$="I GIVE UP.
 THE+T+V+WANTS+TO PLAY+GAMES
+WITH+ME" :: GOSUB 250 :: CA
LL CLEAR :: A$="FOR+GET ABOU
T+IT. DO+NOT+LOOK AT+THE1+SC
REEN ANY MORE"
460 GOSUB 250
470 CALL SCREEN(5):: PRINT "
  SHH. DO NOT TELL HIM.",,,:
: A$="AFTER+ALL U+DO+NOT+NEE
D+A T+V+SCREEN IF+YOU+HAVE+M
E. " :: GOSUB 250 :: PRINT "
 LET THIS BE OUR SECRET.",,,
,,,,,,,,,,,,,,,,
480 A$="1+DO+NOT+LIKE AN UP+
IT+T T+V+SET. " :: GOSUB 250
 :: PRINT " BOY, DO I FEEL B
LUE...";:: A$="IF+THERE+IS+S
OME+THING THAT+T+V+CAN+DO TH
AT+I+CAN+NOT I+WANT+TO+SEE+I
T. " :: GOSUB 250
490 CALL CLEAR :: A$="NOW SC
REEN WHAT+CAN+YOU+DO. " :: G
OSUB 250 :: A$="I CAN MAKE A
 DEATH RAY AND" :: GOSUB 800
 :: A$="GIVE YOU WHAT YOU DE
SERVE" :: GOSUB 800 :: A$="O
F+COURSE+YOU+CAN A1+A1+A1+A1
"
500 GOSUB 250 :: CALL CLEAR
:: GOSUB 820 :: A$="FOO. PLE
ASE SOME+ONE+HURRY AND+TURN+
OFF+THE+T+V BE+FOR+IT" :: GO
SUB 250 :: GOSUB 850 :: A$="
YOU+GOT+ME. " :: GOSUB 250 :
: FOR C=@ TO 1000
510 NEXT C :: CALL CLEAR ::
CALL SCREEN(7):: A$="THE SHO
RT PLAY WE HAVE JUST" :: PRI
NT A$ :: PRINT "PUT ON IS OV
ER.  WE DID IT" :: PRINT "JU
ST FOR YOU. BY THE WAY," ::
PRINT "THE SPEECH MODULE AND
 I LIKE"
520 PRINT "WORKING TOGETHER.
 AFTER ALL," :: PRINT "WE AR
E BOTH PART OF THE" :: PRINT
 "TEXAS INSTRUMENTS TEAM." :
: PRINT :: PRINT :: PRINT "B
EFORE WE GO, THERE IS ONE" :
: PRINT "MORE THING WE WANT
YOU TO"
530 PRINT "KNOW ABOUT. YOU C
AN FIND ALL" :: PRINT "OF TH
E WORDS THAT WE USE IN" :: P
RINT "THIS PROGRAM IN A SMAL
L" :: PRINT "MODULE MADE BY
T.I. FOR THE" :: PRINT "HOME
 COMPUTER. WITH THIS"
540 PRINT "MODULE, YOUR HOME
 COMPUTER" :: PRINT "CAN SAY
 ABOUT 300 DIFFERENT" :: PRI
NT "WORDS. " :: A$="AS+YOU+C
AN+SEE" :: GOSUB 250 :: A$="
THESE+THREE+HUNDRED+WORDS" :
: GOSUB 250 :: A$="WILL+LET+
U+SAY"
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550 GOSUB 250 :: A$="ALL+MOS
T ANY+THING+YOU+WANT. . . "
:: GOSUB 250 :: GOSUB 580 ::
 A$="      T H E   E N D
    " :: PRINT A$ :: A$="TH
E END" :: GOSUB 250 :: FOR C
=0 TO 2500
560 NEXT C :: GOTO 110
570 STOP
580 CALL CLEAR :: CALL COLOR
(11,3,0):: CALL COLOR(12,5,3
):: CALL SCREEN(9):: CALL HC
HAR(0,0,112,32):: CALL HCHAR
(2,0,112,32):: CALL HCHAR(3,
0,112,32)
590 CALL HCHAR(4,0,112,32)::
 CALL HCHAR(5,0,112,4):: CAL
L HCHAR(5,4,116):: CALL HCHA
R(5,10,115):: CALL HCHAR(5,1
1,112,3):: CALL HCHAR(5,15,1
16)
600 CALL HCHAR(5,19,115):: C
ALL HCHAR(5,20,112,13):: CAL
L HCHAR(6,0,112,3):: CALL HC
HAR(6,5,112,5):: CALL HCHAR(
6,11,112,2)
610 CALL HCHAR(6,14,112,5)::
 CALL HCHAR(6,20,112,13):: C
ALL HCHAR(7,0,112,3):: CALL
HCHAR(7,5,112,5):: CALL HCHA
R(7,11,112,2)
620 CALL HCHAR(7,14,112,5)::
 CALL HCHAR(7,20,112,13):: C
ALL HCHAR(8,0,112,3):: CALL
HCHAR(8,5,112,5):: CALL HCHA
R(8,11,112,2)
630 CALL HCHAR(8,14,112,5)::
 CALL HCHAR(8,20,112,13):: C
ALL HCHAR(9,0,112,4):: CALL
HCHAR(9,4,113):: CALL HCHAR(
9,11,112,3)
640 CALL HCHAR(9,13,113):: C
ALL HCHAR(9,20,112,13):: CAL
L HCHAR(10,0,112,9):: CALL H
CHAR(10,11,112,8):: CALL HCH
AR(10,20,112,7)
650 CALL HCHAR(10,27,112,6):
: CALL HCHAR(11,0,112,9):: C
ALL HCHAR(11,11,112,8):: CAL
L HCHAR(11,20,112,6):: CALL
HCHAR(11,26,112,7)
660 CALL HCHAR(12,0,112,9)::
 CALL HCHAR(12,11,112,8):: C
ALL HCHAR(12,20,112,5):: CAL
L HCHAR(12,25,112,8):: CALL
HCHAR(13,0,112,4)
670 CALL HCHAR(13,6,112,4)::
 CALL HCHAR(13,11,112,3):: C
ALL HCHAR(13,15,112,4):: CAL
L HCHAR(13,20,112,4):: CALL
HCHAR(13,24,112,3)
680 CALL HCHAR(13,26,121)::
CALL HCHAR(13,27,120):: CALL
 HCHAR(13,28,112,5):: CALL H
CHAR(14,0,112,5):: CALL HCHA
R(14,5,113)
690 CALL HCHAR(14,10,114)::
CALL HCHAR(14,11,112,4):: CA
LL HCHAR(14,14,113):: CALL H
CHAR(14,19,114):: CALL HCHAR
(14,20,112,3)
700 CALL HCHAR(14,23,112,3):
: CALL HCHAR(14,25,121,0)::
CALL HCHAR(14,26,122):: CALL
 HCHAR(14,27,120,0):: CALL H
CHAR(14,28,112,5)
710 CALL HCHAR(15,0,112,21):
: CALL HCHAR(15,22,112,3)::
CALL HCHAR(15,24,121,0):: CA
LL HCHAR(15,25,122):: CALL H
CHAR(15,26,112)
720 CALL HCHAR(15,27,120)::
CALL HCHAR(15,28,112,5):: CA
LL HCHAR(16,0,112,20):: CALL
 HCHAR(16,21,112,3):: CALL H
CHAR(16,23,121)
730 CALL HCHAR(16,24,122)::
CALL HCHAR(16,25,112,2):: CA
LL HCHAR(16,27,120):: CALL H
CHAR(16,28,112,5):: CALL HCH
AR(17,0,112,19)
740 CALL HCHAR(17,20,112,3):
: CALL HCHAR(17,23,120,6)::
CALL HCHAR(17,29,112,4):: CA
LL HCHAR(18,0,112,18):: CALL
 HCHAR(18,19,112,8)
750 CALL HCHAR(18,27,120,0):
: CALL HCHAR(18,28,112,5)::
CALL HCHAR(19,0,112,26):: CA
LL HCHAR(19,27,120):: CALL H
CHAR(19,28,112,5)
760 CALL HCHAR(20,0,112,26):
: CALL HCHAR(20,27,120):: CA
LL HCHAR(20,28,112,5):: CALL
 HCHAR(21,0,112,26):: CALL H
CHAR(21,27,120)
770 CALL HCHAR(21,28,112,5):
: CALL HCHAR(22,0,112,96)::
CALL HCHAR(10,24,32):: FOR F
=0 TO 8 :: CALL HCHAR(9+F,26
-F,116):: CALL HCHAR(10+F,26
-F,32)
780 CALL HCHAR(10+F,27-F,114
)
790 NEXT F :: RETURN :: A$="
TEXAS INSTRUMENTS"
800 FOR F=0 TO INT(((28-LEN(
A$))/2)-0):: A$=" "&A$
810 NEXT F :: PRINT A$ :: RE
TURN
820 CALL COLOR(13,2,0):: CAL
L SCREEN(5):: FOR F=0 TO 3 :
: CALL HCHAR(12,F,143+F)
830 NEXT F :: FOR F=0 TO 3 :
: CALL HCHAR(13,F,146+F)
840 NEXT F :: RETURN
850 CALL COLOR(14,7,0):: FOR
 F=4 TO 32 :: CALL HCHAR(12,
F,152):: CALL SOUND(-500,176
0,0,-2,0)
860 NEXT F :: CALL SOUND(500
,-7,0):: FOR F=4 TO 32 :: CA
LL HCHAR(12,F,32)
870 NEXT F :: RETURN :: FOR
F=4 TO 60 :: CALL SOUND(-500
,2000,0,4000,0,8000,0):: CAL
L HCHAR(12,12,35)
880 NEXT F :: GOSUB 820 :: G
OSUB 950 :: STOP
890 CALL KEY(0,K,I):: IF I<>
0 THEN 920
900 CALL KEY(0,K,I):: IF I<>
0 THEN 920
910 D=0 :: GOTO 930
920 D=0
930 RETURN
```