

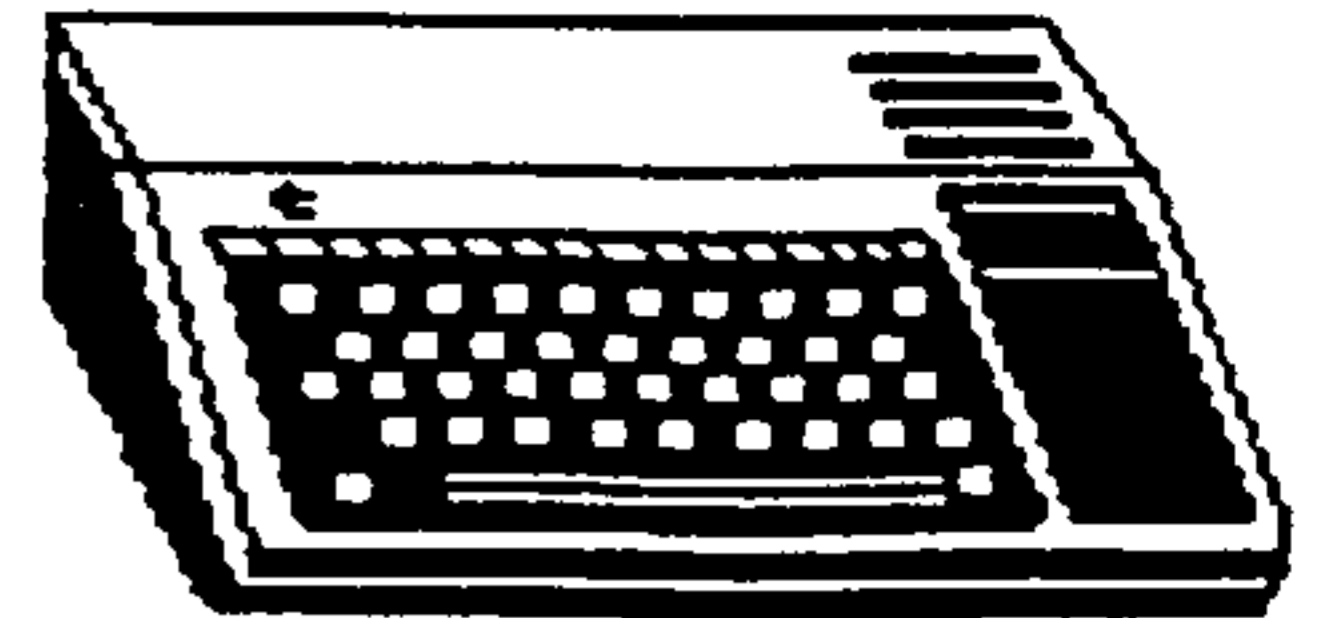


CLEVELAND AREA

TI-99/4A

USER GROUPS

MARCH 1993



OFFICE	TI-CHIPS	MEETINGS
CO-PRESIDENT	Glenn Bernasek 238-6335	10:00 AM
CO-PRESIDENT	Virgil Thomason 1264-7779	N. Royalton
TREASURER	Lin Shaw 235-3912	County Library
MEMBERSHIP	John Parken 331-2830	State Rd. SO. of
	4172 W. 217th St.	Route B2 1/4mi
	Fairview Pl., OH 44126	EVERY THIRD SAT.
SECRETARY	Tim Bodenmiller 234-4297	
DISK LIBRARY	Matt Andel 676-9759	March 20, 1993
TAPE & MODS	John Parken 331-2830	April 17, 1993
HARD COPY	Harry Hoffman 631-2354	???May???

OFFICE	NORTHCOAST	MEETINGS
CO-PRESIDENT	Ken Gladyszewski 1357-7274	1:30 PM
CO-PRESIDENT	Walt Ryder 921-8223	Euclidian Room
Treasurer	Frank Jenkins 283-8526	Euclid SQ. Mall
MEMBERSHIP	Martin Smoley 1-257-1661	E.260th off I-90
	6149 Bryson	(South)
	Mentor, OH 44060	EVERY THIRD SAT.
SECRETARY	Bernie Zuckerman 381-4088	
DISK LIBRARY	Martin Smoley 1-257-1661	March 20, 1993
TAPE & MODS	Frank Jenkins 283-8526	(Small Room)
HARD COPY	Dick Alden 1-352-9172	April 17, 1993



From the Editor's Desk:



Hi TI'ers,

Winter's here, but take hope in the fact that Spring is just around the corner.

Pick up a MICROpendium at Ron Markus' table. Great stuff this month: Regena's XB program "Word Problems for Algebra"; TI-Sweeper-3 level minesweeper XB game to type in; Harrison software has a "Font Dumper" program, to download any of 32 fonts to your MX1000 or MX1020 printer. \$10.00 inc. S&H. (Jim Peterson will sell a disk full of fonts to be used with this program for \$1.50, +\$1.50 S&H.); plus some great tips on TI-Writer, DSKU., & TIWR and printers. Also, this is the '92 Index issue.

Bruce Rodenkirch has downloaded a bunch of files from a BBS and has cataloged 31 disks of material for the Library. Anyone that sees Bruce, should shake his hand and say "Thanks for the Good Job". Martin Smoley has printed this catalog in two pages with his laser printer. Very nice looking work! I have made copies for those who save all their Newsletters, so they don't have to rip them up. Pick it up at the meeting!

Again, there are pages from another club. Jerry Keisler's material on "Controlling the World with Your TI"

may be of interest to all those following Ken Gladyszewski's Analog to Digital projects! Jerry's from Paris, Texas and is really into electronics in a big way!

Glenn Bernasek's 5 line "mergeable" lowercase program is interesting, and should be tried out!

You may get this paper after St. Pat's Day because this is the last thing I put in the NLetter and was called into work because of the storm and was caught with my "pants down" so to speak (my procrastination was showing!) Please forgive!

Check your local newspaper for "Ham Fests", as they are a good source (at times) for computer equipment. Many of our members are HAM operators and hold special information about where the best places and times are to go.

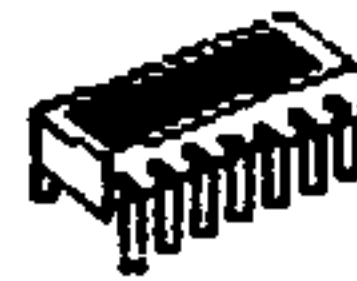
John Parken has an article for next month on how to make your own Serial Port splitter to better use the RS232 port 1 & 2 for adding a modem.

Well, that's all for now. Even the night owls have to sleep sometimes! See you at the meeting.

Harry



TI-CHIPS Notes



by **Chris Bodenmiller**



The meeting was called to order at 10:43. And to correct a few mix ups in my last minutes, our treasurer, Lin Shaw, reported that Nationwide took over Cardinal. Sorry, about the confusion.

John said that several peoples memberships are expiring this month, and he hopes that they will renew their memberships soon. It is vital that we support each other in the TI community. Please contact John as soon as possible.

Matt said that he received a few orders for disks.

John brought up the subject of MICROpendium support, and suggested that the club could subscribe to MICROpendium when our subscription to Vulcan runs out. The club instead decided that we should continue encouraging MICROpendium sales from Ron, our very own TI dealer, and we could place an ad in MICROpendium to advertise for our group to help encourage out of state memberships. Harry made a motion for the ad, which was quickly seconded and unanimously approved.

Les demoed two programs that calculate Fibonacci numbers (I hope that's spelled right). They were originally from MICROpendium, and point out the tremendous mathematical accuracy of our TI. A great many other

computers do not even come close to the TI's precision. Les also modified Vogt's routine to print the ratio in a seperate column.

Glenn just bought a MICROpendium for this month, and one of the articles said that the first TI virus had surfaced. This is not funny, and can not be tolerated by the TI community. Harry does recall one time when his ROS went down and it appeared to be a virus, but was merely an unfortunate programming error with an I/O message. This possibility may be looked into. If this is a virus, we do not appreciate this irresponsible behavior.

On a more happy note, Glenn demoed a mergeable XB routine which is only 5 lines long, and gives you lower case letters. This is a very handy routine to have around, and will undoubtedly make the screen output a little nicer.

Glenn won the raffle, and the meeting was adjourned. The meeting will be back to it's regular starting time next month (10 am), and I hope to see you all there.

Respectfully submitted,

Timothy C. Bodenmiller



A "MERGEABLE" lowercase ROUTINE

By Glenn Bernasek

TI-CHIPS Cleveland, Ohio

I know that there have been many routines written to provide lowercase print on the screen. However I thought I would create my 'own' handy-dandy simple minded routine which would allow Extended Basic programs to display 'regular' lowercase characters on the screen instead of the clunky II small uppercase letters.

All you have to do is type in the five line routine below, and save it by typing: SAVE DSKn.LC,MERGE

Then, when you want to create 'regular' lowercase screen characters in an Extended Basic program, just load the X-Basic program and then type: MERGE DSKn.LC

(BE SURE THAT THE X-BASIC PROGRAM DOES NOT START WITH LINE NUMBER ONE!)

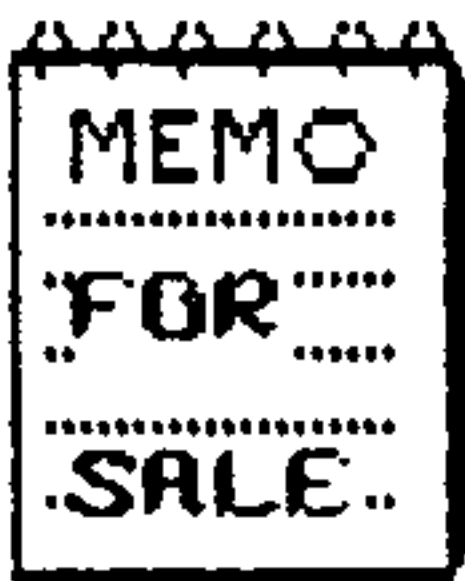
Then save the 'merged' X-Basic program, and you're in business.

I also am aware that there are an awful lot of numbers to type, and that the lines are beyond the normal 4 line limit. Therefore, just contact the Northcoast 99ers / TI-Chips librarians for a copy of the 'mergeable' routine called 'LC'.

```

1 CALL CLEAR :: FOR I=97 TO 122 :: DISPLAY AT(12,6)SIZE(19):"Building Lowercase" :: READ LC$ :: CALL CHAR(I,LC$) :: !(c) 1993 G.W.Bernasek
2 Data 00000038043C643C,0040404078444478,0000001C2020201C,000404043C44443C,00000038478403C,0018242070202020,00000038443C0438,0040404078444444
3 DATA 0010001010101010,0004000404042418,002020242830282
4.0010101010101010,0000006854544444,0000005864444444,0000003844444438,0000007844784040
4 DATA 0000003C443C0404,0000005864404040,0000003C40380478,001010381010100C,000000444444438,0000004444282810,0000004444545428,0000004428102844
5 DATA 00000044443C0438,0000003C0408103C

```



- 1 PEBox: 1 Drive, RS232, 32K CARD.
- 3 Computers w/power supply, modulators.
- 1 Star/Gemini 10X Printer.
- 1 300 Baud Volksmodem.

2 Speech Synthesizers and 21 Game Modules.

Call: John Hanna at 582-2074





NORTHCOAST 99ers

By Bernie Zuckerman

The February meeting of the Northcoast 99'ers was called to order by co-president Ken Gladyszewski at 1:30 P.M. There were 19 members present. The financial report was given by Treasurer Frank Jenkins; there were expenses of \$81.95 and income of \$216.21. The report was accepted as presented. The minutes of the last meeting were corrected to read that Marty Smoley will not demonstrate the Report Generator of TIBASE but will show how to print reports thru the command file.

Ken then commended Harry Hoffman on the excellent job he is doing on the Newsletter. Others commented on the artistic appearance of the Newsletter and how the articles not only read well but looked good. When Harry came in he got a big round of applause for his efforts.

Ken announced the Cleveland Winter Hamfest at the Cuyahoga County Fairgrounds, then the Lake County Hamfest on Sunday, March 28th at the Madison High School. There will be another Hamfest at Massillon, and the Cuyahoga Falls Hamfest on March 7th. There can be some good computer parts bargains at the hamfests and even some TI items..

Norb Sitter reported that a computer group is dropping the Erie group from distribution of their newsletter because the Erie Newsletter is not originating any new articles.

Norb stated that the Erie group is quite angry about this since some of their members have been writing original articles, especially on the Basic language as used in the TI. Norb reported that the Erie group is losing members (there are only 13 members left with only three showing up at the meetings) but they are holding their own but depend on the Newsletter to keep them alive. The general feeling is that whoever that group is that has cancelled out the Erie group should be chastised.

Harry Hoffman announced that an ex-Chips member is selling his TI equipment and if anyone is interested to contact Harry for the telephone number.

Jerry Reising and Marty Smoley have equipment for sale.

The regular business meeting was adjourned and Marty Smoley started his demonstration of writing reports through the command files and not the Report Generator. Starting with Funnelweb Marty took the members through an explanation of writing reports using the command file. Many comments were made during the demonstration, especially from those who have used TIBASE. The last issue of the Newsletter has an excellent review of Marty's demonstration written before he gave the demonstration.



9900 Micro Expansion (Side-car):
RS232; 32K; DSDD Controller, also a
Corcomp .5 Meg Ram Disk.

Call: (216) 933-3354 for price. Ask for Jerry Reising



For Sale

Martin A. Smoley
 6149 Byron Drive
 Mentor, Ohio 44060
 (216) 257-1641

For Sale



- One PE Box with 32k Expansion Card, TI Disk Control Card and one REMEX Double Sided Single Density Disk Drive\$110.00
- One REMEX Double Sided Single Density Disk Drive, no case, no power supply\$20.00
- One SHUGART Single Sided Single Density Disk Drive, no case, no power supply\$5.00
- One external disk drive setup with drive case with power supply, cables and two half height Single Sided Single Density Disk Drives\$40.00

DISK 93001: TIA Pictures

TIA pictures converted from GIF files downloaded from one of the local BBS's. DALI, JIMINY (Cricket), PLANET, RAT AND TIMETRVL.

DISK 93002 and 93003: BASIC COMPILER.

This disk was obtained from the European delegation at this year's Chicago show. I don't know much about it but I think it will compile programs written in Basic. There are some restriction on how the various line statements are made. There is a large documentation file but it's written in German. Perhaps one of our members knows German well enough to provide us with a translation.

DISK 93004 and 93005:

These two disks are Genie files 4308 and 4309 and are a collection of programs from the Toronto 9T9 User Group. There is a Drawing Program, Songs, Disk Manager, I'M-LOST maze game and others. One I particularly like is DISKSORT which will make an alphabetical listing of your disk library in D/V80 format to help keep track of your programs. I loaded about 40 disks and it produced a very handy readout.

DISK 93006 and 93007:

This is compilation of Christmas TIA instances that Harry Hoffman gave to me. He used some of them for the graphics in the newsletter.

DISK 93008: FREDDY

FREDDY is an assembly game that may already be in the library but here it is for your enjoyment. It has a load program. Freddy has to make his way through a system of tunnels by climbing ropes and walking through the tunnels, trying to avoid the many hazards until he finds the way out to the next section.

DISK 93009: TIC163

TIC163 is an updated C-99 Compiler which will work on the TI and the Geneve 9640. There is a large documentation file on this disk too. This is Genie 4938

DISK 93010: *TCX-1098R

*TCX-1098R is an assembly program (with source) by Jim Peterson on how to do math with Roman Numerals. Genie 4981.

MURPHYSLAW is a humorous text file listing various laws of Mr. Murphy. Genie 4981.

LTBULB is a humorous compilation of jokes on "how many people does it take to screw in a lightbulb".

PRINT9AL is a routing to print TIA instances.

T>YMODEM is an improved, de-bugged update of YMODEM for TELCO. It works fine too.

DISK 93011: CHAINLINK

CHAINLINK is a slick assembly solitaire game. The game is easy to learn but not easy to win. There are fifty games, guaranteed solvable. I played this with real cards too and the computer version is much more convenient. This is not the same CHAINLINK game as on 93018

Also on this disk is SAY, a speech routine by Barry Boone.

DISK 93012:

4239 is a Genie file from Don O'Neil with programming utilities for the 9938 chip devices like the Geneve and 80 column cards.

Genie 4932 is a programming guide for the Asgard 128 memory system card.

Genie 4936 has several utilities for the 9640 including an MDOS SYSTEM/SYS program.

CHICAGO/BM is a D/V80 file with Beery Miller's comments on the 1992 Chicago Fair.

KEY and LOCK are 9640 utilities.

DISK 93013: CIN-DAY Newsletter

The January 1992 issue of the CIN-DAY Communique newsletter. These are text files with comments on various subjects. Genie 4801

DISK 93014: MDOS V 1.23F

MDOS V 1.23F for the Geneve. This is the last SSSD version of MDOS. The user notes for this version are on disk 93017. I have the next version on my Ram Disk which I will put in the library as soon as I can figure out how to transfer it to a DSSD.

DISK 93015: CIN-DAY Newsletter

The March 1992 issue of the CIN-DAY Communique newsletter. A few programs but mostly text files. Genie 4803.

DISK 93016: CIN-DAY Newsletter

93016: The February 1992 issue of the CIN-DAY Communique newsletter. Some programs, text files and tutorials. Genie 4802.

DISK 93017: GPL V 1.01

GPL V 1.01 for use with the Geneve 9640. Also has the update notes for MDOS 1.23 which is on library disk 93014.

DISK 93018: TURBO

TURBO (UTIL1) is a fast track copier. TRACK1 is a track copier that will "copy anything" but is not recommended for regular copying because it works the drives frequently.

CRIBBAGE is an excellent game program.

CHAINLINK and SOLITAIRE are solitaire card games. Not the same CHAINLINK as on 93011.

BACKGAMMON-Backgammon game program

DISK 93019:

A collection of Christmas music and graphics with a loader. The music is well done and the songs are linked to play continuously for easy listening.

DISK 93020:

Genie 4248. Here is #6 of Don O'Neil's V9938 Programmer's Pack for the Geneve 9640, 80-column card, TIM, etc. It contains miscellaneous demos by various authors. Files included in this archive are these archives: >DM/F, >DMOUSE, >FRACTALS, >HMOUSE, >KITKA, >MISC, >PALDEMO, and >PALETTE. (Note: you have to use ARCHIVER III more than once to get back to the original files!).

Genie 4249. This is #5 of Don O'Neil's V9938 Programmer's Pack. It contains MODE 4 UTILS by Rod Van Orden. Files included in this archive are -DOCUMENT, DEM-01;EXB, DEMO, LOAD, and XBVPD.

Genie 4257. This is #7 of Don O'Neil's V9938 Programmer's Pack. It contains EGA utilities by Don O'Neil. Files included are as follows: -README, EGA COM, FRACTAL, MODE4 EGA, POKER, POKER-S, and XHI-PAINT. (Don is in the process of modifying some of these files - so that they work better with the DIJIT AVPC? - so a revised version may be uploaded in the near future. For now, have fun with these!)

DISK 93021:

Genie 4250. This is #4 of Don O'Neil's V9938 Programmer's Pack. It contains the program (X80), the docs (X8ODOC), and a demo program (DEMO) for Alexander Hulpke's X-80.

Genie 4251 and 4252. Here is #2 and #3 of Don O'Neil's V9938 Programmer's Pack. They contains XHI/T, which is the source code for V 3.6 of Alexander Hulpke's XHI and XHIDOC.

Genie 3036 is the MY WORD program for the Geneve 9640 and Genie 3282 is a MY-Word Externals Demo by J. Peter Hoddie dated May 3, 1989

This archive includes a group of files designed to demonstrate the use of Externals for MY-Word. Version 1.21 and later of MY-Word support this function. Using Externals, programmers may create new commands

and keypresses for MY-Word without having to modify the program. The user may select up to four sets of Externals to have in memory at any time. Each group of externals may be up to 16K in size.

DISK 93022: TRACK HACK V 2.1

TRACK HACK V 2.1 is a fairware copy program that will copy any disk, protected or not. Separate programs are included to run on the Cor Comp and TI Controllers. Complete documentation is included.

Genie File 5006 is XCOPY.ARK by John Johnson which is an emulation of the IBM XCOPY command that works from MDOS on the Geneve 9640. It will copy a group of files and subdirectories to another drive path.

DISK 93023: TETRIS

TETRIS, joy stick version. This was demoed at one of the meetings but never put in the library to my knowledge. It sure is lot more fun to play this with joysticks also some people are pretty adept with the keyboard.

DISK 93024 and 93025: LAPD Recipes

Los Angeles Police Department Recipes. Honest! This is what these were called many years ago when I bought them. They were supposed to be favorite recipes of the LAPD. They look like good recipes and they will print so you can present them to your favorite chef to prepare. I don't know if there are any "ala king" recipes here. (I couldn't resist that.)

DISK 93026 and 93029: Calendar Nudes

This is a set of fairware nude girl calendar pages created by Ken Gilliland. They are for 1989 but this shouldn't be a problem if you are a serious art lover. These are in DV/80 format so they can be easily revised and printed.

DISK 93030 and 93031: EZSONGS

EZSONGS.PT1 and PT2 (Genie 4186 and 4187) Here is Part one and two of the "EMUSIC PREPROCESSOR" by Norm Sellers, uploaded with the permission of the author. This interesting (and, as far as I know, unique) music utility has been around for a while (it was originally distributed on a "flippy" diskette in 1986!) and has its enthusiastic fans (such as Jim Peterson of Tigercub Software), but many people have apparently never seen it. Briefly, the EMUSIC assembly CALL LINK subroutine gives the XB programmer capabilities not normally available in XB. You can simply and quickly code music as remarks in the calling XB program. Includes the files ALWAYS, INGARDEN, LOAD, MOONRIVER, MTNHIGH, UNEEDEDME, WEDDINGSNG, WEREUTHERE, WHISPERING, CHIMES, DANCER. Also included are the utility files SYSTEX and SYSTEXDOC.

CONTROL THE WORLD WITH YOUR T1 COMPUTER

From the TEXAS - PARIS 99er NEWSLETTER



By Editor - Jerry Keisler



: CONTROL THE WORLD :
: WITH YOUR T1 :
: PART IV :
: by Jerry Keisler :

RELAY CONTROLLED I/O

----- THE CIRCUIT -----

The "CONTROL A ROBOT" circuit by Ken Glodysewski (July 9, 1992 newsletter) uses relays. I have been working with solid state circuits to produce the same type control, but relays seem to be more versatile. This issue includes the relay circuits. I will include the solid state circuits in a later issue.

The PIO OUTPUT is the same Ken used: diodes are added to the relays controlled by transistors to short the voltage produced by the collapsing magnetic field of the relays. Otherwise, this voltage could damage the transistors.

Output D-0 is used to reset the input latch. The latch holds all incoming input data until it is reset. The program resets the input after it reads the input.

After looking thru the solid state circuits, relays may be a cheaper way to go.

This circuit could be made to work from a bare console

with a PIO attached to the side. However, if you want clock, speech and event storage, you will need extended basic, speech, 32k, disk and the clock.

-- THE FINAL PROGRAM --

The program will probably consist of several parts.

- A) INPUTS
 - 1) Joystick.
 - 2) Keyboard.
 - 3) Clock.
- B) OUTPUTS
 - 1) PIO port.
 - 2) Disk drive.
 - 3) Speech.
- C) CONTROL
 - 1) Reconize input.
 - 2) Send to proper output.
 - 3) Log time and action to disk.
- D) USER INPUT
 - 1) Build file of what input affects what outputs.
 - 2) Save that file
 - 3) Load that file
- E) INSTRUCTIONS

There you have it. I am not sure how it will turn out, but I believe it will require a 2 dimension file to keep track of what is happening.

-- THE CURRENT PROGRAM--

The program in the December, 1992, newsletter should work the latch circuit by changing line 710 to

```
710 OPEN #1:"PIO.CR"
711 PRINT #1:CHR$(TOTAL+1)
712 FOR I=1 TO 10
713 NEXT I
714 PRINT #1:CHR$(TOTAL)
715 CLOSE #1
```

The delay is needed to allow for the movement of the relays. Otherwise, the relays will not have time to react to the latch reset signal.

-- FOR FARTHER THOUGHT --

The T1 has two RS232 ports, besides the PIO port. If a simple circuit could be devised to convert the serial RS232 ports to PIO output ports than we could use the RS232 ports for output (8+8) or 16 circuits.

Radio Shacks "Engineer's Notebook II" shows a 8-bit serial to parallel data

converter using 74/LS90, 74LS164 and 74LS374 on page 63. The 90 is a BCD decade counter, the 164 is a 8-bit shift register and the 374 is an octal D flip-flop. If anyone has used this circuit or another circuit please let me know.

The PIO can be used for input. That's right, PIO is bidirectional. Has anyone tried sending a signal to the computer thru the PIO by using switches? Can the PIO be opened as OPEN #1:"PIO" INPUT? Using PIO and Joystick as input would allow 6+8 or 14 inputs. If anyone has tried this let me know, I would like to work with the idea.

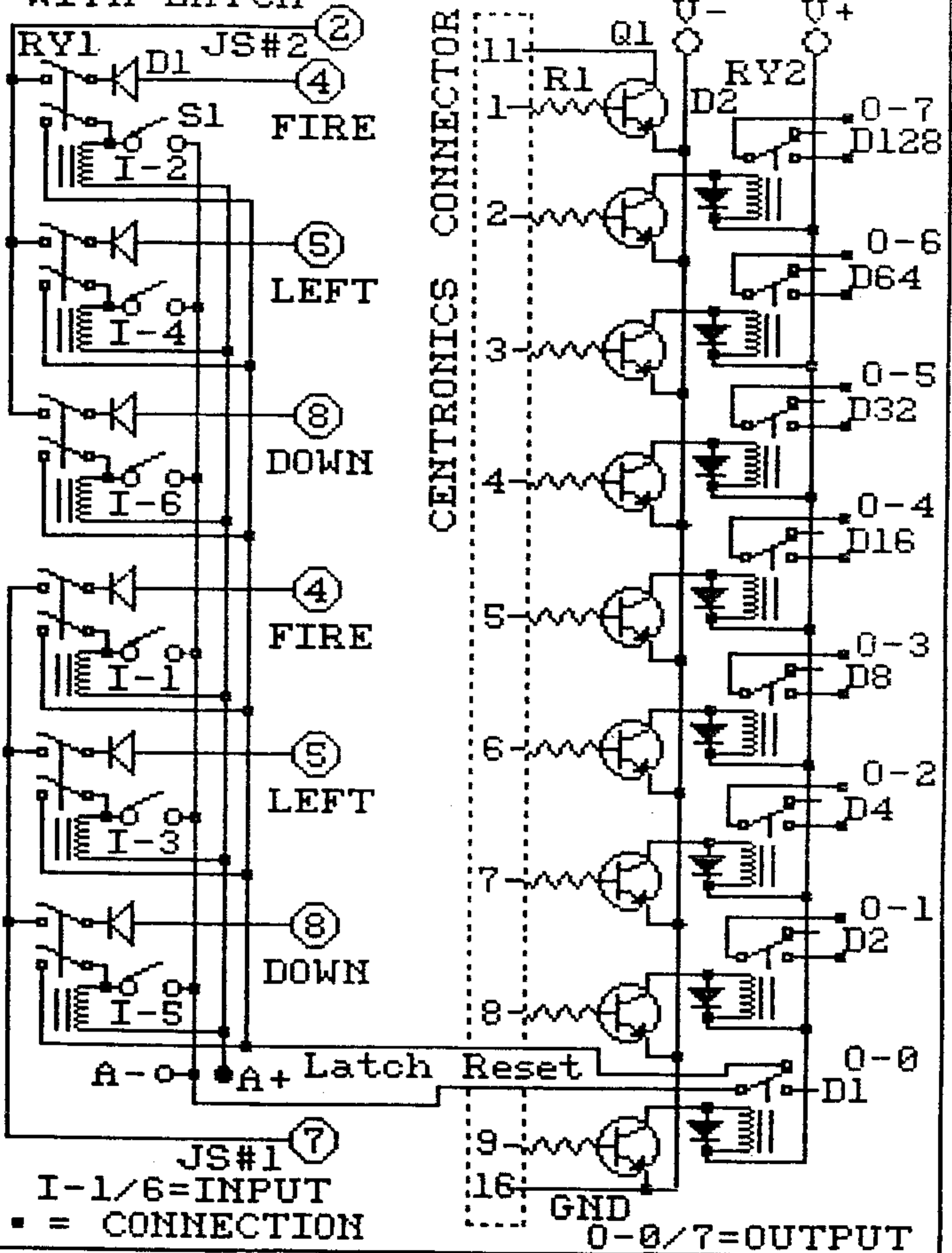
Please send information to Jerry Keisler, 2221 College Dr., Paris, Texas 75460.

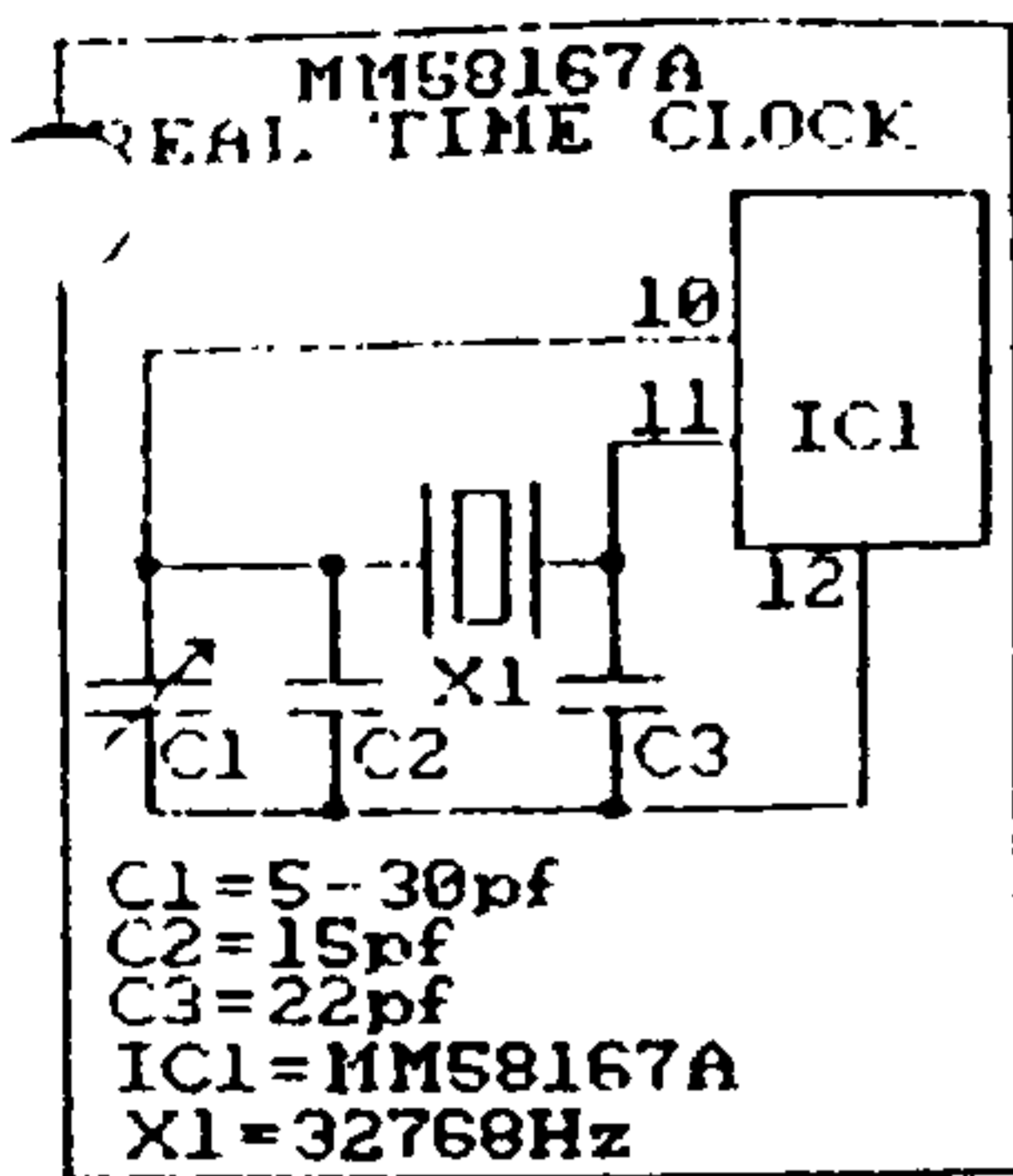
----- PARTS LIST -----	
D1	x6 = 1N4148 RS276-1122 10/99c
D2	x8 = 1N1001 RS276-1653 25/1.98
Q1	x8 = NPN RS276-1617 15/1.98
R1	x8 = 10K 1/4W RS271-1335 10/78c
RY1	x6 = DPDT 12V-43ma / 125V-1A. RS275-249 3.99ea.
RY2	x8 = SPDT 12V-37.5ma / 125V-1A. (or) RS275-241 1.99ea
RY2	x8 = SPDT 12V-38ma / 125V-10A. RS275-248 2.99ea.
S1	x6 = INPUT ⑦ = JOYSTICK PIN NUMBERS.
A-/A+	= 12VDC-500ma RS273-1653 10.95ea.
A-/A+	is isolated from computer.
U-/U+	= 12VDC-500ma RS273-1653 10.95ea.
1 FEMALE CENTRONICS printer connector.	
D128 is data number for output 0-7.	
PRINT #1:CHR\$(128) to turn 0-7 on.	
I/01, I/02, I/03	

CONTROL THE WORLD WITH YOUR TI

JOYST INPUT WITH LATCH

PIO OUTPUT





: CONTROL THE WORLD :
: WITH YOUR TI :
: PART III :
: by Jerry Keisler :

The way this project is developing, I decided the articles need numbering. Therefore, the PIO article would be PART I and JOYSTICK, PART

-----UPDATE-----

I found a cheaper optocoupler to replace the EC63041. I plan to use them in future circuits. Mouser # 570-MCA231 is a MCA231. It sells for \$.99 and has darlington output.

===== CLOCK =====

The system needs a clock to be versatile. The clock I have at my disposal is the ZENO board clock. I would like input from others as to whether or not the enclosed program works with other clocks and what they are.

-----DRIFT-----

The ZENO board clock tends to drift a lot and is hard to adjust to the right time. The best I could do with the circuit shown with the ZENO board was 3 seconds fast every minute. I experimented with several circuits and found that this circuit provides a

constant time with the console on or off. I have run the clock three weeks with a loss of 1 sec per day. C1 seems to provide a range of 1 second in 1 minute. The 22 mfd capacitor is a .125 inch disk ceramic. The 15 mfd capacitor is a small mica. The 5-30 mfd is a .2 inch dia ceramic trimmer similar to Mouser stock no 24AA023. The stability and adjustment problems disappeared when I removed the resistors shown in the ZENO circuit.

-----CLOCK PROGRAM-----

The following program will load the clock and provide voice output each minute. When the clock is included in the CONTROL THE WORLD circuit, it will most likely be reduced to speaking once an hour and updating the screen once a minute at best.

-----SPEECH-----

If you do not have speech then rem lines 190 thru 250 and line 590

```

100 !SAVE DSK4.CLOCK
110 DISPLAY AT(2,9)ERASE ALL
: "CLOCK Loading...."
120 !load data
130 DIM MINUT$(60), HOUR$(12)
, WK$(7), MO$(12)
140 RESTORE :: X33, X55=300
150 FOR DW=1 TO 7 :: READ WK
$(DW):: NEXT DW :: FOR DM=1
TO 12 :: READ MO$(DM):: NEXT
DM
160 DATA SUN, MON, TUES, WEDNES
, THURS, FRI, SATUR
170 DATA JANUARY, FEBRUARY, MA
RCH, APRIL, MAY, JUNE, JULY
180 DATA AUGUST, SEPTEMBER, OC
TOBER, NOVEMBER, DECEMBER
190 ! load speech
200 FOR I=0 TO 12 :: READ HO
UR$(I):: NEXT I :: RESTORE 2
40 :: FOR I=0 TO 9 :: READ M
INUT$(I):: MINUT$(I)="0 "&MI
NUT$(I):: NEXT I
201 FOR I=10 TO 19 :: READ M
INUT$(I):: NEXT I
210 MM$="TWENTY " :: N=20 ::
GOSUB 230 :: MM$="THIRTY "

```

```

:: N=30 :: GOSUB 230 :: MM$=
"FORTY " :: N=40 :: GOSUB 23
0
220 MM$="FIFTY " :: N=50 ::
GOSUB 230 :: MINUT$(0)=" " :
GOTO 270
230 RESTORE 240 :: FOR I=0 T
O 9 :: READ MM$ :: MINUT$(N
+1)=MM$&MM$ :: NEXT I :: RE
TURN
240 DATA " ", ONE, TWO, THREE, F
OUR, FIVE, SIX, SEVEN, EIGHT, NIN
E
250 DATA TEN, ELEVEN, TWELVE, T
HIRTEEN, FOURTEEN, FIFTEEN, SIX
TEEN, SEVEN TEEN, EIGHT TEEN,
NINE TEEN
260 ! do what?
270 DISPLAY AT(15,2)ERASE AL
L: "(S)et clock (R)ead clock
"
280 CALL KEY(3, KY, SY):: IF K
Y=83 THEN 300 ELSE IF KY=82
THEN 500 ELSE 280
290 ! set clock
300 CALL INIT
310 DEF SET=X+6*INT(X/10)
320 DISPLAY AT(3,6)ERASE ALL
: "S E T C L O C K"
330 FOR I=7 TO 17 STEP 2 ::
CALL MCHAR(1, 26, 49):: NEXT I
340 DISPLAY AT(7,13)SIZE(10)
: "MONTH 1-12"
350 DISPLAY AT(9,6)SIZE(17):
"DAY OF MONTH 1-31"
360 DISPLAY AT(11,2)SIZE(21)
: "DAY OF WEEK 1-7 SUN=1"
370 DISPLAY AT(13,14)SIZE(9)
: "HOUR 0-23"
380 DISPLAY AT(15,15)SIZE(8)
: "MIN 0-59"
390 DISPLAY AT(17,15)SIZE(8)
: "SEC 0-59"
400 ACCEPT AT(7,24)SIZE(-2)V
ALIDATE(DIGIT):X :: IF (X<1)
+(X>12) THEN 400 ELSE MO=SET
410 ACCEPT AT(9,24)SIZE(-2)V
ALIDATE(DIGIT):X :: IF (X<1)
+(X>31) THEN 410 ELSE D=SET
420 ACCEPT AT(11,24)SIZE(-1)
VALIDATE(DIGIT):DW :: IF (DW
(1)+(DW>7) THEN 420
430 ACCEPT AT(13,24)SIZE(-2)
VALIDATE(DIGIT):X :: IF X>23
THEN 430 ELSE H=SET
440 ACCEPT AT(15,24)SIZE(-2)
VALIDATE(DIGIT):X :: IF X>59

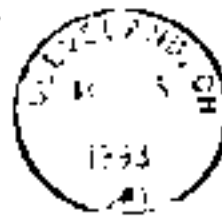
```

```

THEN 440 ELSE H=SET
450 ACCEPT AT(17,24)SIZE(-2)
VALIDATE(DIGIT):X :: IF X>59
THEN 450 ELSE S=SET
460 DISPLAY AT(19,1): "(C)han
ge data (S)et clock" :: CAL
L KEY(3, KY, SY):: IF KY=67 TH
EN DISPLAY AT(19,1): "" :: GO
TO 400 ELSE IF KY<>83 THEN 4
6
470 CALL LOAD(-31164, 5, 0, M, 0
, H, 0, DW, 0, 0, 0, MO)
480 CALL SOUND(1, 20000, 30)::
GOTO 270
490 ! read clock
500 DEF TIME=X-6*INT(X/16)
510 DISPLAY AT(23,1)ERASE AL
L: "hold "C" to change" ::
GOTO 620
520 CALL PEEK(-31164, X1, X2, X
3, X4, X5)
530 X=X1 :: SEC$=STR$(TIME):
: IF X1<10 THEN SEC$="0"&SEC
$
540 IF X3<>X33 THEN X=X3 ::
MIN$=STR$(TIME):: X33=X3 ::
IF X3<10 THEN MIN$="0"&MIN$
550 IF X5=X55 THEN 580 ELSE
X=X5 :: HR=TIME :: X55=X5 ::
IF HR>11 THEN M$=" PM" :: M
M$="P M" ELSE M$=" AM" :: MM
$="A M"
560 IF HR=0 THEN HR=12 ELSE
IF HR>12 THEN HR=HR-12
570 HR$=STR$(HR)
580 T1$=HR$&" "&MIN$&" "&SEC
$&M$ :: DISPLAY AT(6,11): T1$
590 IF MIN$(>)T1$ THEN CALL SA
Y(HOUR$(VAL(HR$)),, MINUT$(VA
L(MIN$)),, MM$):: T1$=MIN$
600 CALL KEY(3, KY, SY):: IF K
Y=67 THEN 270
610 IF X1+X3+X5<>213 THEN 52
0
620 CALL PEEK(-31158, X1, X2, D
, X4, X5)
630 X=D :: D$=STR$(TIME):: X
=X5 :: X5=TIME
640 L1$="TODAY IS "&WK$(X1)&
"DAY" :: L1=INT((32-LEN(L1$)
)/2):: DISPLAY AT(2, L1): L1$
650 L2$=MO$(X5)&" "&D$&"", 19
92" :: L2=INT((32-LEN(L2$))/
2):: DISPLAY AT(4, L2): L2$ ::
GOTO 520

```

Cleveland Area User Groups
% Harry Hoffman
3925 Trowbridge Ave.
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