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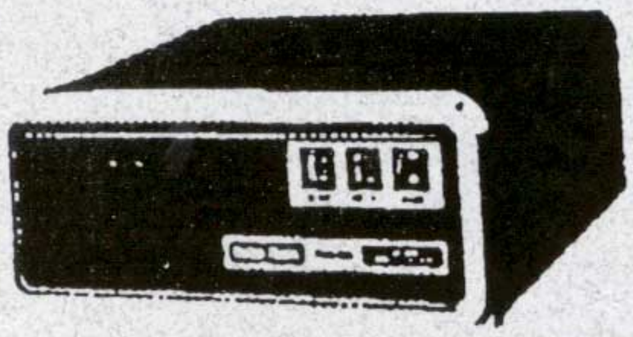

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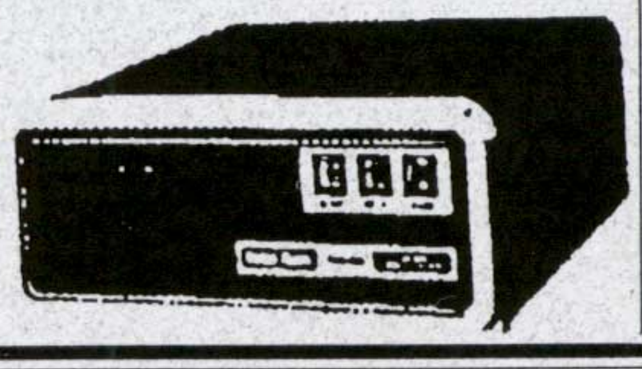

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PUBLISHER-EDITOR
Lance Wolstrup
CONTRIBUTING EDITORS
Roy T. Beck
Dr. Allen Jacobs
TECHNICAL ASSISTANCE
San Gabriel Tandy Users Group
Valley TRS-80 Users Group
Valley Hackers' TRS-80 Users Group

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Article submissions from our readers are welcomed and encouraged. Anything pertaining to the TRS-80 will be evaluated for possible publication. Please send hardcopy and, if at all possible a disk with the material saved in ASCII format. Any disk format is acceptable, but please note on label which format is used.

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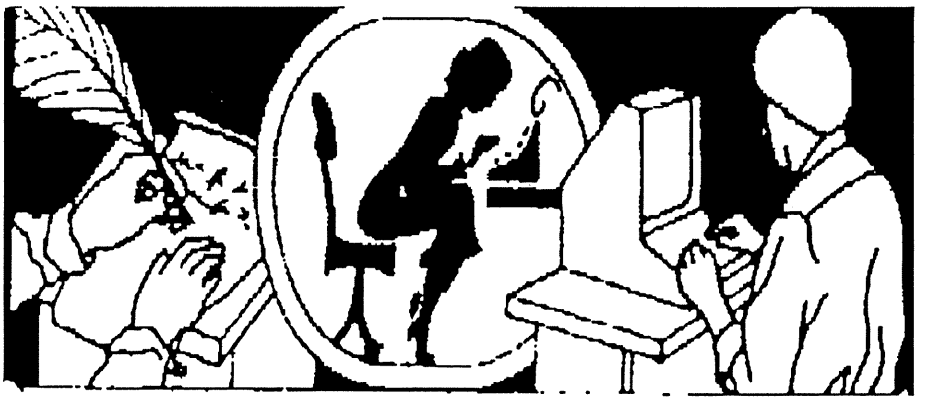


THE TRS-80 MODEL 4 EMULATOR FOR THE PC

Review of the Jeff Vavasour emulator

by Jim King

I am just about the last Model 4 hold out, when all my friends have long moved to PCs. I have used TRS computers to run my company for more than 10 years, mostly the model 4P. I use check tracking, and phonebook type database programs that I wrote, and Visicalc for bidding and billing in my electrical contracting business. I resisted getting a PC because I would be down for so long with a learning curve moving my programs and files over to the new machine. That is — until I learned of Jeff Vavasour's program, the Model 4 emulator. Gee, a Model 4 running inside a PC — I was convinced, and I bought a 486.

The most important comment about the Emulatorm is that on my machine it is FAST FAST FAST!. Model 4 programs SCREAM, about 3 times as fast as the 4P. The old 4P seems pokey in comparison. I can now run my old programs and spread sheets on my new fast machine, and the best part is that the program changes the PC floppy drives A: and B: to directly read TRS disks. *NO DISK CONVERSION IS NECESSARY!*

The Emulator has 4 'drives', 0 thru 3. These can be virtual drives (files) on the internal PC hard drive (HD), or it can be a combination which includes your floppies. I usually put:

0: Operating system and important programs, a PC HD File.DSK
1: PC HD Data Diles.DSK
2: A: Floppy drive, 5.25"
3: B: Floppy drive, 3.5"

You can put them in any order you wish. You can format the HD files to 80 track, so I have plenty of room for files and programs on the HD 'disks'.

It is possible to configure the screen either the ghastly white of the Model I, or it can be green. I use the green because my 4P has a green screen. I do wish, however, that Mr. Vavasour had added crange. Oh, well!!

If you wish to run Model III programs you will need the Model III ROM (just like the 4P). Fortunately a program is included that will read it from your Model III or 4, and then copy it to a virtual disk on your PC's hard drive.

F6 puts up an overlay that enables you to:

A. Select Keyboard layout: PC, TRS-80, or Custom. F5 then chooses your options.
B. Turn the BEEP On or Off
C. Choose White or Green color
D. Add LineFeeds to printer output.
E. Make the 1.2 M.byte drive 40 or 80 track
F. Make the serial port COM1 or COM2
G. Select character set: Kana, or International
H. Select PC graphics adapter VGA or CGA. VGA supports HiRes graphics.
\- Slow down the speed of execution
\+ Speed up execution

F7 overlay allows you to put a 'DiskName' by a Drive #. I usually use:

0	MULTDOS4.DSK	(virtual on the HD)
1	DATA.DSK	(on the HD)
2	A:	(5" floppy)
3	B:	(3" floppy)

F8 overlay is a Snapshot Option that allows you to save whatever you are doing, turn of the PC, and then load it back later.

F9 overlay is a Z-80 & Debug program, and also the way to exit to MSDOS.

F10 overlay summarizes the above, tells the currently selected keyboard, and the sound.

Pressing any of these stops TRS processing.

CTRL F10 is Reset.

F1, F2, & F3 are the same as on the Model 4 keyboard.

You can operate your Modem through COM1 or COM2.

If you find that the Emulator won't read your old TRS disks, format new floppies on the emulator, and then copy the programs/data to them. My 4P reads the emulator formatted floppies.

There is a different Model III Emulator included on the disk that Jeff Vavasour claims will run about 3 times faster than the Model 4, but I haven't used it yet.

File Transfer Utilities are included that enable files to be moved easily between MSDOS and TRS environments.

There are, however, a few glitches:

1 The clock that updates the directory, and TIME$, etc. runs at about 1/10 speed, falling behind fast. I can live with that, though it is inconvenient. It would be nice if it just read the PC clock.

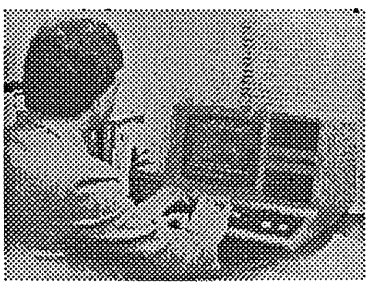
2 My programs interrogate port ### on the 4P to see if the printer is ready, but on the Emulator it must interrogate port #248.

3 The arrow keypad is LOCKED to the number keypad in all conditions of the NUMLOCK key. This means that since I need both numbers and arrows I must keep punching NUMLOCK or use the numbers across the top. This slows me down a lot, and causes a lot of mistakes. I am told that it is a software problem. Curiously, when you press F7 to open the window that shows which disks the Emulator is looking at, the arrows and the number keypad ARE separate as they are in DOS and Windows.

I wrote a letter to JV asking him to modify the program to separate the arrows from the number keypad, but received no reply.

Maybe someone out there in TRS-80/PC land will tackle this problem. I sure would like to find someone who will make this modification.

The JV Emulator does seem to run everything, just like it was a real Model 4. It is great and I recommend it to anyone who owns a PC, but still has ties to the TRS-80 world.



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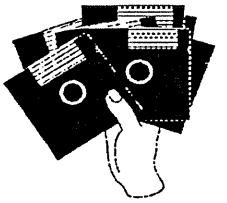

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MULTIDOS BASIC FOR MODEL 4

by Vern Hester

The Model 4 version of MULTIDOS is not a "true" Model 4 DOS in the same sense as the Model 4 version of TRSDOS6/LS-DOS and DOSPLUS — it's actually closer to being a Model III DOS with enhancements to use all the capabilities of the Model 4. For memory mapping purposes, the Model 4 version of MULTIDOS runs in the Model III mode.

But the Model 4 MULTIDOS is not just the Model III version of MULTIDOS with an 80x24 screen driver added. Many enhancements have been added to take advantage of the capabilities of the Model 4.One of the more noticeable areas of change is the Model 4 version of SUPERBASIC. Here are just some the features (note: all numbers are decimal unless suffixed with an H).

When editing a line the <RIGHT ARROW> moves the cursor one space as the <SPACE-BAR>.

The <E>xit function has been deleted.

The REFERENCE utility is invoked with the "@" key.

Under Basic shorthand the user can backspace to use the single keystroke commands.

([<SHIFT>]up-arrow, [SHIFT>]down-arrow, comma, period, and slash.)

SINGLE LETTER COMMANDS

a[n] [m]	Auto line numbering starts at n (default 10), incrementing by m (default 10)
C	Continue program execution after STOP
D[n] [-m]	Delete lines from n to m. (Changed to have similar syntax to LIST. m does not have to be an existing line.
E[n]	Edit line n. (Default current line)
I	Insert. Invokes (pseudo) A.+1,1
K"program	Remove program
L[n] [-m]	List lines from n to m
L"program	Load program
M n,m	Move line n to m
N n,m	Duplicate line n at m
P[n]	List page of lines from n (defaults current line)
R[q]	Run program starting at line q
R	Run program starting at first line
R"program	Load and run program
S"program	Save program

The period "." may be used for n or m to represent the current line.

TRON has seven extra functions when followed by the numbers 1-7.

TRON or TRON 0	Trace in the upper right corner of the display.
TRON 1	trace to the line printer
TRON 2	display the BASIC statement in the lower left corner BEFORE it is executed
TRON 3	single step with delay. Delay is controlled via <CTRL><D> to increase delay, and <CTRL><F> to decrease delay. (Need <CTRL><S> between each delay change. (see note below.)
TRON 4	single step line.
TRON 5	single step instruction.
TRON 6	single step off.
TRON 7	display erroneous statement.

CMD FUNCTIONS

B	"Soft" disable of "BREAK" key.
C	Invoke "SPACE COMPRESSION" utility.
D	Invoke DEBUG.
E	Interrogate last disk related error after BASIC initialized.
P	Invoke "PACKER" utility.
Q	Dual/single dimension string sort.
S	Exit Basic.
U	Invoke "UNPACKER" utility.
V	Display active scalar variables.
X	Invoke "REM REMOVER" utility.

CMD"uuuu" requires a minimum of 6080 free bytes to execute. If less than 6080 bytes are free, then the message "ignored!" will be displayed and a return to the next statement (if any) will occur.

KEYWORD CHANGES

CLEAR

Clears all variables, CLOSEs all OPENed files, resets execution pointer, nullifies all FOR-NEXT

loops, and GOSUBs, resets ON ERROR/STOP GOTOs, resets all variables to their default type, and activates the <BREAK> key.

CLEAR nnnn - (nnnn - 0 to 32767, -32768 to -1)
Changes the amount of space allowed for string storage, and nullifies all FOR-NEXT loops and GOSUBs. Although nnnn can be less than -32768, a number much less than -25000 will produce an "Out of memory" error.

ON STOP GOTO line number/"label"
This command will deactivate the <BREAK> key in a user input mode, and cause a branch to line number/ "label" if the <BREAK> key is pressed during program execution.

GOTO "label"
GOSUB "label"
RESTORE line number/"label"
ON ERROR GOTO "label"
ON n GOTO/GOSUB "label"/line number",etc.
RESUME "label"
IF-THEN-ELSE "label"
RUN LABEL "label"

CLS val
Homes the cursor and sets all of the video refresh RAM to value of val(0 to 255).

KEYWORDS REMOVED FROM BASIC

AUTO	use A
CLOAD	not used
CONT	use C
CSAVE	not used
DELETE	use D
EDIT	use E
SYSTEM	not used

KEYWORDS ADDED TO BASIC

LABEL	LABEL"label" - defines current line as being "label"
EXIT	EXIT line number/"label" - satisfies FOR-NEXT loop without FOR parameter reaching limit.
SORT	SORT var(0) - single dimensioned array sort.
IND	PRINT IND(n) - prints n spaces from current cursor position (n=0 to 255)
ERASE	ERASE var(0) - removes var array from RAM.
ZERO	ZERO var(0) - sets all elements in var array to zero if numeric or nul if string.
LPOS	LPOS(0) - returns the position of the printer under software control.
HEX$	HEX$(integer var) - returns a four character string equivalent to integer val.
BIN$	BIN$(integer val) - returns a sixteen bit character string equivalent to integer val.
CALL	CALL integer val - executes code beginning at integer val.
WPEEK	WPEEK(integer val) - returns the WORD at integer val.

EXAMPLES OF NEW BASIC COMMANDS

PROBLEM: to obtain the hexidecimal equivalent in a RAM location.

Old way:

```
10 DEFINT A-Z
20 H$="0123456789ABCDEF"
30 X=PEEK(N)
40 Y=PEEK(N+1)
50 L1=INT(X/16)
60 L2=X-L1*16
70 M1=INT(Y/16)
80 M2=Y-M1*16
90 A$=MID$(H$,M1+1,1)+MID$(H$,M2+1,1)+
MID$(H$,L1+1,1)+MID$(H$,L2+1,1)
```

New way:

```
10 A$=HEX$(WPEEK(N))
```

PROBLEM: prematurely exit a FOR-NEXT loop.

Old way:

```
200 FOR X=1 TO N
210 IF A$(X)="MATCH" THEN Y=X:X=N:NEXT:
GOTO 400
....
400 PRINT A$(Y)
```

New way:

```
200 FOR X=1 TO N
210 IF A$(X)="MATCH" THEN EXIT 400
220 NEXT X
...
```

400 PRINT A$(X)

LABELS

While programs are being developed, it is easier to use LABELs to define various routines, than to assign specific line numbers.

Rules for labels:

1 LABEL must be the first statement in a line.
2 The "label" referenced must match character length and case.
4 Any character other than 0 and 34 is permitted.

```
60 IF A$="R" THEN GOSUB "NEW BOARD"
... more program lines
480 LABEL "NEW BOARD"
```

The labels may be removed after a program is developed via the use of the "*" command. This command invokes RESOLVE/BOL and replaces references to labels with line numbers. The LABEL"label" is removed from each line.

PROBLEM: Limit/control an input to a numeric variable.

Old way: Varies with the limits of the acceptable input characters.

New Way:

```
10 CLEAR
20 CLS
30 AC$="012345"
... menu printed here with five options
80 INPUT@704,1,95,USING A$,"SELECTION ";S
```

SYNTAX:

```
INPUT @pos,[#]len,char,[NOT] [USING
exp$],["prompt";]varu

LINEINPUT @pos,[#]len,char,[NOT] [USING
exp$],["prompt";]var$

INPUT !col,row,[#]len,char,[NOT] [USING
exp$],["prompt";]varu

LINEINPUT !col,row,[#]len,char,[NOT] USING
exp$],["prompt";]var$
```

SYMBOL	MEANING
@pos	specifies exactly in terms of video display positions - where the INPUT prompt or INPUT field - if no prompt, will be printed. Integer expression between 0 and 1023 (64x16), or 0 and 1919 (80x24).
!col,row	specifies exactly the column (col), and which row the INPUT prompt or INPUT field - if no prompt, will begin printing. Integer expression between 0 and 63 for "col", and 0 to 15 "row" (64x16), or between 0 and 79 for "col", and 0 to 23 for "row" (80x24).
#	specifies automatic <ENTER> when INPUT field is full.
len	this is the length of the INPUT field. Integer expression between 1 and 255.
char	This is the field character. Integer expression between 1 and 255. (These are video "POKE" values, not "PRINT" values.)
NOT	mask reject indicator.
USING	mask indicator.
exp$	string expression representing the mask characters.
USING exp$	= only use characters in exp$.
NOT USING	=do not use any characters in exp$.
"prompt;"	the optional prompt message.
varu	numeric or string variable, or numeric/string variable list.
var$	a single string variable.

BEAT THE GAME

By Daniel Myers

INFIDEL
An Infocom Adventure

A word or two before we start: throughout the pyramid, you will come across a number of hieroglyphic symbols. These symbols, when properly translated, contain clues and hints to solving the various puzzles presented in the game. Since you are using this walkthru, I will not be translating the hieroglyphics.

Well, here you are, lying in your cot, trying to shake off the effects of a drug given you by your absconding workers. Since time is of the essence (isn't it always?), get up, then leave the tent and make your way due South to the Work Tent. Along the way, make sure you pick up the matches near the Fire Pit. The tin foil, which is an empty cigarette pack, can be safely ignored.

Now, while you're doing this, a plane will appear overhead. It has the navigation box you've been waiting for. However, since you also have this walkthru, you don't really need the box. So, whether or not you want to take it is up to you (if you do, it is used in conjunction with the map that comes with the game; you have to dig where the "X" is).

In the Work Tent is a knapsack that contains a rope and a canteen. Open the sack and get the canteen, then get the sack, which will automatically go over your shoulders. Return to the Fire Pit, then go due West to the Supply Tent. Take both the axe and the shovel, step outside, and then walk North, and West. This brings you to a river bank. Open the canteen and fill it with water.

Head East and you will be outside your tent again. Enter it, and break the lock on the trunk. Get and drop the lock, then open the trunk. Inside is some food, a map and an inspection sticker. Get the food and the map. Inside the map is a stone cube, which you will soon need to enter the pyramid, so make sure you take that. The map you can drop, and the sticker you don't need for anything, but you might want to read it before moving on.

Now, go outside the tent, and go East to the North Path. Follow the path South until you come to the South path. From here, go East twice. You are now at the spot where the pyramid is buried. Start digging until you find the top of the pyramid with the square hole in it. When that appears, put the cube in the hole, and the door to the pyramid will open. Drop the shovel, since you won't be needing it anymore (also the box, if you have it with you). Go down into the pyramid.

You stand in the Chamber of Ra, near an altar. Drop your sack, and get the rope. Tie the rope to the altar, and then throw the rope North. You will be climbing down that way soon. In the meantime, get the torch and the jar. Open the jar, which has oil inside, and dip the torch in it. Light a match, then light the torch. Close the jar, and put that and the matches in the sack. Now get the sack, and you're ready for your explorations.

(Note: Somewhere along the way, you will get hungry. When that happens, just eat the beef, and then drink a little water). Climb down the rope, and you will be in the Circular Room. Here you see a golden cluster, a statue and four doorways with counter-balanced doors. If you attempt to go down any of the passageways, you will find that a door will descend and prevent you from going more than about halfway along the corridor. So, what you need to do is find a way of keeping the doors up while you explore the passages. Fortunately, there is an easy, if tedious, way to do this.

Roll the statue towards one of the passageways (For example: "Roll statue NW"). The first time, the

statue will fall, and the head will break off (ho hum). Get the head, then roll the statue into a passageway, and make sure you drop the head with the statue as well. Now, you can go to the opposite passageway, and pick up the treasure that's there. You will have to roll the statue (and don't forget the head!), into each of the four passages in turn, so that you can get all four of the jeweled clusters. To continue with the example, so you know exactly what has to be done, after rolling the statue into the NW passage, go back to the SE passage, and you will be able to proceed to the room that has the opal cluster of Neith.

As you get each cluster, drop it off in the Circular Room. When you have all five clusters, drop the sack, and put all the clusters in it. The gold one is just a treasure, but the other four will have a very important purpose later. For now, climb back up the rope into the Chamber of Ra.

OK, now we're going to visit the Barge Room and its environs. Head along South to the landing, and continue down to the Narrow Hall. From there, go NE then NW, and you are in the Barge Chamber. You will be visiting the Barge itself in a short while; for the moment, go West, then North, then East, and you will be behind the Barge, where a hallway starts. Go all the way North along this hallway to the Inner Chamber. Ignore the corpse, which is wearing a jeweled ring. The ring is not a treasure in the game (no points for getting it), and is in fact a deadly trap, so it's best not to touch it.

From the Inner Chamber, go West to the Golden Room, and then South to the Golden Alcove. Pick up the Gold Chalice, then return to the Inner Chamber, and from there go East to the Silver Room, and South to the Silver Alcove. Guess what's here? Right, a Silver Chalice. Pick that up, and return to the Barge Room.

Once in the Barge Chamber, go back to the front of the boat, then enter it by going North. You are in the middle of the Barge, and there is a mast here. At the moment, it's somewhat stuck, but there's an easy way around that. Go East into the Aft Cabin, Down into the hold, then West into the West End of the hold.

Here the mast ends in a slot. If you look in the slot, you will see a piece of wood (called a "shim"), wedged in the slot to hold the mast in place. Get the shim and drop it (has no use in the game). Now return to the deck and get the beam. If you like, you can go West to enter the Fore Cabin to read the little scroll of hieroglyphics, although that isn't necessary.

Go back to the Chamber of Ra. From there, go East into the Cube Room, then West, then South. You will be in front of a panel with some bricks in it. Remove and drop the First, Third, and Fifth Bricks. When you remove the Fifth one, a secret passageway to the East will open. Go through it to the Turning Passage, then down to the bottom of the stairs.

Use your pick to dig the plaster away from the door, then go West to through the Narrow Passage until you come to the room with the two niches. Here's where the fun starts. Put the beam in the niches, then stand on it.

Dig away the plaster with your axe. As you do so, the floor will fall away (nasty little trap, that!). Fortunately, since you're standing on the beam, you're safe.

Okay, now open the door and go West into the Antechamber. Since there are still a few other sneaky things to avoid, get the beam, then go South. This is another antechamber, with a door in the west wall. Of course, there is also a trap here for the unwary, so put the beam in the door. Now you can open the door safely. So, do that, and go West into the Slab Room.

(Note: somewhere along the line here your torch will start to sputter. When that happens, get the jar and the matches from your pack. Light a match, then turn off the torch and dip it in the oil. Your match will go out, but you will then have time to light another one so you can light the torch. After this, you can leave the jar and matches because you are near the end of the game and won't need them any more.)

Here is a slab with holes in each of its four corners. In fact, the placement of the holes is very reminiscent of the Circular Room. So, drop the pack, and take out the four jeweled clusters (the gold one you can leave in there). Now, put the clusters in the Slab as follows: Diamond in the First Hole; Ruby in the Second Hole; Emerald in the Third Hole; Opal in the Fourth Hole. As each one is inserted into its hole, there will be a click from the slab. Once the last cluster is in place, you can raise the slab.

Inside you will find a golden spatula and a book. Get the book. The spatula can be left in the slab, unless you want to read the hieroglyphics in the book (you need the spatula to turn the pages). In any case, you have what you came for, so pick up the pack and go East back to the Antechamber, and get the beam. Now go North twice to the Antechamber with the timbered door. As you may have guessed,

this door is also trapped.

Put the beam under the timber, then break the seal on the door (that beam certainly comes in handy!). Now, open the door and go North into the Burial Chamber, then East into the Treasury, where the scales are. You must balance the scales to be exactly even with the table top in order to safely take the scarab. So, drop the sack, and get the two chalices. Put the Gold Chalice on either of the scales. Fill the silver chalice with water, and put it on the other scale. Now, you can get the scarab.

Return to the Burial Chamber. Place the book in the large recess and the scarab in the small recess. There will be a click from the statues that hold the sarcophagus cover in place. Now, turn the statues in the following order: Neith, Selkis, Isis, Nephthys.

At this point, you have your perfect score. If you continue the game by opening the sarcophagus, you will die; there is no way around that. You can also go back to the surface through the stairs in the Chamber of Ra, but all you can do then is wander around in the desert. The only other thing you can do is just quit the game where you are, and receive your rating of "Master Adventurer". Whatever you choose to do, the ending is most unsatisfying, so take your pick; it's all the same, anyway.

PLANETFALL

An Infocom Adventure

The third in Infocom's wonderful series of Science Fiction Adventures is Planetfall. You will be delighted by the humor of the game. It is always charming you somehow. The game features several logical puzzles that can be solved with no greater magic than common sense.

The point of the game: You begin on the spaceship Feinstein. You are lowly cleaning help scrubbing the deck, when all of the sudden the ship explodes--and by an accident of fate you happen to be standing near the escape pod right at the moment. You jettison from the Feinstein and land on a nearby planet with a strange mystery. It seems to have been recently abandoned for no reason. Survival is point one. You'll need food and rest. Repair many of the broken machines that you find. And then figure out why everyone is missing. Let's get started.

Deck Nine - All you have to do is keep waiting until the explosion - stay here - you'll be entertained (randomly) by the Ambassador from Blow' K-bibben-Gordo. After the ship explodes immediately go Port. Get in the Webbing. Wait -- until the Pod lands and the Emergency Kit appears. Get out of Webbing. Take kit. Open Door. Go up. Keep going up until you get to Courtyard. Drop the brush and your ID. (You won't be needing the brush or the ID - they are excess baggage.)

Go north to the Plain Hall, then go NE. Go east until you get to the corridor Junction. Then continue south until you get to the Machine Shop. Go west to the Tool Room, take Laser (but drop the old battery) take the pliers and the flask and the Metal Bar. Then go back to the Machine Shop and put the flask under the spout.

Then go north to the Corridor Junction. Then go east till you get to Booth 2. In Booth 2 drop the Laser and the pliers. Then go west to the elevator lobby and push both buttons. Then go west till you get to the Corridor Junction. (If you're hungry, open the kit and enjoy a treat of goo.) From the Corridor Junction, go south then go east. Take the box. Then go back to the Booth 2. Drop the box. Then go back to the Corridor Junction.

Now go north to the Administration Corridor, go north and south between the South Administration Corridor and the Adminstration Corridor until you see the glint of light (random). Then search the crevice in the Administration Corridor South. Hold the bar near the key (it's a magnet) and bingo...you got it. (If you don't get the key the game can't even begin.) Now drop the bar once you have the key. (If the bar comes in contact with any of the cards you'll find that they get scrambled--something you will regret.) Now go to the Mess Corridor. Unlock the padlock with the key. Drop the padlock and the key and open the door. Drop everything except your uniform. Take the ladder and go back to the Administration Corridor. Drop the ladder. Open the ladder. Put ladder over the rift. Then go north over the ladder. Then go west into the offices. Open the drawers in the desks and take the kitchen card, the shuttle card, and the upper elevator card. By this time you should be getting tired. It's important that you find a place to sleep that is safe. Go back to the Dorm Area and get in bed. When you wake up you'll be bright and chipper for tomorrow.

Get out of bed and take your things. Go to the Mess Corridor. Go south into the Mess Hall. Take the canteen and open it up. Slide the kitchen card through the slot and go south. Put the canteen under the spout and push the button. Take the canteen. You've now found an unlimited source of food. Just make sure that you keep your canteen

filled and you'll be O.K. Go back inside the Mess Hall and drop the Kitchen access card. Now go back to the Machine Room. From the Machine Room, go east to the Robot Room.

Search the robot. Then turn it on. Go to the elevator lobby. Go south inside the lower elevator and drop the lower card and the shuttle card. Then go to the upper elevator. By this time your valuable friend Floyd should be bugging you for attention and loving. Eat when you are hungry...it's better to eat from your canteen than the kit. You might want to save the goo in the kit for emergencies. Just go back to the kitchen and refill your canteen when you need to. But don't forget to drop the kitchen card in the Mess Hall.

Go to the Upper Elevator. Slide the upper card through the slot. Push the up button. Wait. When the elevator door opens go south then go northeast to the Comm Room. Pay attention to the color of the flashing light. This will be the same color koulant that you'll have to get in the Machine Room. Go back to the elevator, activate the elevator and go downstairs to the Machine Room. Fill the flask. Push the same color button as the flashing light in the Comm Room, then take the flask.

Go back to the Comm Room and empty the flask in the hole. Pay attention to the new color light. Take the flask back downstairs to the Machine Room and push the new colored light koulant code. Take the filled flask back upstairs and empty the flask in the hole again. Do this one more time (there are three lights in all). This will fix the Comm Room. You can drop the flask since you won't be needing it any more. Now go back downstairs to the elevator lobby. Don't forget to drop the upper card in the upper elevator. Eat if you have to, but try to only eat from the canteen. If the canteen needs to be filled, do it now.

Go to the lower elevator. Slide the lower card through the slot. Then push the down button. Wait. Drop the lower card and take the shuttle access card. When the elevator stops get out by going north. Then go east. Go south and then go east. Slide the shuttle card through the slot. Push the lever up. Do it again. Wait until the display says 60. Then push the lever down. Again. Wait until the shuttle slides into the station.

Go west and drop the shuttle card. Go north, then go east. Go east again. At the fork go southeast to the Project Corridor West. Go east to the Project Corridor. Then go south to the Projcon Office. Go east to the Computer Room. Take the output and read the output. (By the way make sure that Floyd joins you in the Computer Room.) With Floyd go south. Then go north until the Project Corridor east. Then go east to the Main Lab. From the Lab go south.

Search the lab uniform pocket and take the card and the paper and the battery. The paper has the clue for opening up the combination lock in the Rec Corridor (a puzzle that you'll never need). Go back to the Project Corridor East. Then go north to the Library Lobby. Play with the machine if you want. It's very good for clues about the whys of the story, and a lot of fun to translate. But time is of the essence. Go east to Booth 3. Slide the card through the slot and push the beige button.

Zap!!! You find yourself back in Booth 2. Take a look around; everything you put inside the Booth is waiting for you. Slide the card through the slot again and this time push the tan button. Wheeeeee! Now you and your supplies are back in Booth 3. Take the pliers and the bedistor. Go west. Then go north. Then go north again to the Course Control. Open the cube. Remove the fused bedistor with the pliers. Drop the fused bedistor and the pliers. Take the good bedistor and put it in the cube. Close the cube.

Go to Systems Corridor West. Go down into the Repair Room. Make certain that Floyd is with you here. If he's not, just wait and he'll turn up. When Floyd shows, tell him to go north. When he comes back, tell Floyd to take the Fromitz. Go back to the Systems Corridor. Then go north to the Planetary Defense. Open the panel. Take the second board. Put the shiny Fromitz in the socket. Close panel. You have now completed the middle portion of the game. Eat when you have to. Now go to the Main Lab.

Open the Bio-Lock, go southeast then go east. Make sure that Floyd is with you. He'll volunteer for an important mission; let him. Open the door, close the door, wait, open the door, close the door. Floyd will be out of commission. Take the card and sing your song about the legend of Starcross. Go back to Booth 3. By now it's late in the day and time for rest. Once in Booth 3, slide the teleportation card through the slot and push the beige button. If you still have time before you rest, go ahead and fill your canteen in the kitchen, then go to sleep in the dorm area.

By now you're starting to feel pretty sick. If you didn't get a chance last night to fill your canteen, you'd better do that now. Head down to the Booth 2. Do your teleportation routine. Drop the teleport card, and make certain that you have the miniaturization card. Take the laser with the new

battery. Go to the miniaturization booth. Slide the card through the slot then -- type 384 (that was the number from the computer output).

Please do a game save at this point because you won't be able to waste any moves after this.

You have shrunk down to the size of a chip. At Station 384 go east to the Strip near the station. Then go north to the Strip near the relay. Look inside the relay. Make sure that your laser is set to 1. Fire the laser at the speck. Keep on doing that until the speck is no more. Once that's done, turn the dial on the laser to 6. Now head back south. Oh no! A killer microbe.

Fire the laser at the microbe. Keep firing until you find yourself holding a HOT laser. Once the laser is HOT, throw the laser over the side. The microbe will follow the laser and vanish to its death. Now head back to the Booth. From the Auxiliary Booth go north to the Lab Office. Do another game save at this point (this will be your last chance to take a rest).

Search the desk, then take and wear the gas mask. Push the red button. Open the door. Go west into the Bio Lab. Open the lab door. Go west to the Bio-lock west. Open the Bio-lock and go west into the Main Lab. Run back to the Projcon office. Go south into the Cryo-elevator. Push the Button. Whewww!! Just wait a little bit and now all will come clear. The game is over. You are a hero! And all is well in the universe until your next adventure!

Please note that it is possible to finish the game in less than 2-1/2 days. But why rush it!!

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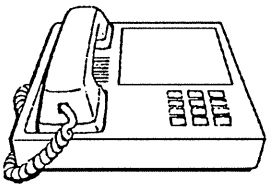

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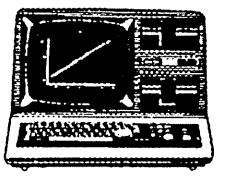

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MODEM COMMANDS

by Lance Wolstrup

I recently bought a new modem to replace the old, tired 2400 baud external antique that I've had hooked up to my Model 4. After unpacking my new toy, I began to read the manual. This, my friends, was an experience in itself.

Judging from the sentence structure and spelling, the writer's formal education in English must have been that of watching a maximum of two American movies in a downtown Seoul movie theater in 1984, or possibly — a graduate of the Los Angeles Unified School System. The manual was atrocious, and while cable connection was clearly explained (*does anyone really need instructions on how to run a wire from the wall connection to the modem, and then another wire from the modem to the phone? Well, maybe*), it made references to various cryptic modem strings — and the explanation of the command language was dutyfully omitted.

Now, do you know what the following modem string means?

AT&F1&C1&D2&K4W1S11=40

Don't feel bad. Neither did I. But, being somewhat tonacious by nature, I collected a few pamphlets, magazines and books on the subject and began to make notes. The following is what I came up with. There may be some ambiguities due to various interpretations of commands, even errors, but I believe most to be correct.

Oh, the modem string... It tells the modem to do the following:

- ATtention
- Load factory default settings #1.
- DCD ON indicates data connection carrier from remote system.
- When disconnect, return to command state and leave Auto answer disabled while DTR is off.
- Enable software flow control.
- Error correction for call progress reported.
- Fast dialing

Hope the readers find the information useful.

CMD	DESCRIPTION
+++	Escape Code. Returns modem to command state. A one second delay is required before and after this AT code.
AT	Attention code. Precedes all commands except A/ (repeat last command) and the +++ escape code.
A	Answer phone line. Modem goes to answer mode.
A/	Repeat last command line. (Does not use AT).
B	Select CCITT V.21/V.22 protocols.
B1	Select Bell 103/212A protocols.
Dn	Dial the number that follows.
En	Command echo 0=disabled 1=enabled
Hn	On/Off Hook control 0=on hook/hang up 1=off hook)
In	Return product ID or checksum information (0-5).
Ln	Speaker volume 0=low, 1=med-low 2=medium, 3=high
M1	Speaker on until carrier received.
M2	Speaker always on.
M3	Speaker disabled while dialing and after carrier received.
N	Connect only at speed in S37. When S37=0 connection speed is same as last AT command speed issued.
N1	Connect at highest possible speed.
O	Return online.
O1	Return online or initiate retrain sequence if 2400 bps connect.
P	Set pulse dial as default.
Qn	Result codes 0=enabled 1=disabled 2=enabled when originating and disabled when answering.
Sr?	Return the decimal value of register r.
Sr=n	Set register r to value n.
T	Set tone dial as default.
V	Result codes 0=numeric 1=verbose

CMD	DESCRIPTION
Wn	Error correction for call progress 0=not reported and CONNECT XXXX reports DTE speed 2=not reported and CONNECT XXXX reports DCE speed
X	Blind dial (Ignore dial tone and busy signal); send CONNECT.
X1	Blind dial; ssend CONNECT XXXX; do not detect busy signal.
X2	Wait for dial tone before dialing; send CONNECT XXXX; do not detect busy.
X3	Ignore dial tone; sends CONNECT XXXX or sends BUSY if busy signal detected.
X4	Wait for dial tone before dialing; send connect XXXX result codes when connected; send NO DIALTONE if dial tone not received in 5 sec; send BUSY if busy signal detected.
Y	Long space disconnect 0=disabled 1=enabled
Zn	Reset modem and load stored configuration (0-1).
&C	DCD signal always ON.
&C1	DCD ON indicates data connection carrier from remote modem.
&D	Ignore DTR signal.
&D1	Switch to asynchronous command state upon On-to-Off transition of DTR.
&D2	Disconnect; Return to command state. Auto answer disabled while DTR is off.
&D3	Soft reset initiates upon ON-to-OFF transition of DTR.
&Fn	Load factory default settings 0=\N1,&K,W0,&Q,&D,&C 1=\N3,&K3,W0,&Q5,&D,&C 2=\N3,&K3,W0,&Q5,&D2,&C1
&Jn	Telephone wall jack type 1=RJ-11/RJ-41/RJ-45S standard line 2=not supported
&K	Disable flow control.
&K3	Enable bidirectional hardware (RTS/CTS) flow control.
&K4	Enable software (XON/XOFF) flow control.
&K5	Enable transparent software (XON/XOFF) flow control.
&Ln	Line selection (0=dial-up, 1=not supported).
&Mn	Same as &Q.
&Pn	Pulse dial make/break ratio 0=39/61 10pps 1=33/67 10pps 2=33/67 20pps.

CMD	DESCRIPTION
&O	Mode selection 0=Direct async 1=sync1 2=sync2 3=sync3 5=error correction async 6=normal async.
&Rn	RTS/CTS sync mode 0=CTS responds to RTS 1=CTS on
&Sn	Select DSR action 0=always on 2=EIA recommendation.
&Tn	Test modem (0-8).
&Vn	Show active and stored configurations.
&Wn	Write active configuration to non-volatile memory (0-1).
&Xn	Synchronous transmit clock source 0=internal 1=external 2=slave receive.
&Yn	Load stored configuration profile #0 or 1 upon startup.
&Zx=n	Store phone number n(x=0,1,2,3).
\An	MNP maximum block size 0=64 1=128 2=192 3=256.
\Bn	Transmit break 1=100ms 2=200 3=300...9=900
\Gn	Modem to modem flow control 0=off 1=XON/XOFF.
\Kn	Break processing (0,1,3,5).
\Ln	MNP link 0=stream 1=block.
\Nn	Operating mode 0=normal 1=direct 2=MNP Reliable 3=Auto Reliable 4=LAPM/MNP Reliable.
\O	Originate MNP Reliable link.
\Tn	Set inactivity timer 0=diabled 1-42=minutes.
\U	Accept MNP Reliable link.
\Y	Establish MNP Reliable link.
\Z	Switch from MNP to Normal mode.

CMD	DESCRIPTION
%Cn	Data compression 0=disabled 1=enabled.
%Dn	Set BTLZ dictionary size 0=512 1=1024 2=2048 3=2048 if %M3 is used, or 4096 if %M1 or %M2 is used.
%En	Auto retrain 0=disabled 1=enabled.
%L	Report signal level (value in -dBm).
%Mn	BTLZ compression 0=disabled 1=transmit only 2=receive only 3=2-way.
%P	Reset local and remote modems' BTLZ dictionaries.
%Qn	Report line signal quality (0-8). 0 indicates better quality 8 indicates poorer.
%Sn	Set maximum BTLZ string length (6-250, default=32).
-B	Fall back to 1200 bps at -10dBm.
-K	Do not convert LAPM connect.
-K1	Convert LAPM to MNP 10 connection if -K1 used for both modems.
-Un	Change transmit level to a preset level during fall forward (0-7).
*H	Negotiate link at highest allowed connect rate.
*H1	Negotiate link at 1200bps.
)Mn	Reduce power level to less than -10 dBm if either modem set to)M1. If neither set, then transmit at -10 dBm.

S-REGISTERS

An S Register is used to fine tune the operation of the modem, similar to the 'AT' commands. To set an S Register to a specific value, use 'ATSn=x', where n represents the S Register to be modified and x is the value to be inserted.

S-REG	PURPOSE
S0	Number of rings until auto-answer
S1	Ring counter
S2	Escape character
S3	Carriage return character
S4	Line feed character
S5	Backspace character
S6	Wait for blind dialing
S7	Wait for carrier after dial
S8	Pause time for dial delay
S9	Carrier detect response time
S10	Lost carrier to hangup delay
S11	DTMF tone duration
S12	Escape Code Guard Time
S13	Reserved
S14	Bit mapped test options
S15	Reserved
S16	Bit mapped test options
S17	Reserved
S18	Test timer
S19	Reserved
S20	Reserved
S21	Bit mapped options
S22	Bit mapped options
S23	Bit mapped options
S24	Bit mapped options
S25	Delay to DTR
S26	RTS to CTS delay
S27	Bit mapped options
S28	Reserved
S29	Reserved
S30	Inactivity timer
S31	Reserved
S32	Reserved
S33	Reserved
S34	Reserved
S35	Reserved
S36	Negotiation failure treatment. For S36=7, an MNP is attempted and if it fails, a normal connection is established.
S37	Desired Teleco line speed. For S37=0, attenpts to connect at speed of last AT command issued, maximum 9600 bps.
S38	Delay before forced disconnect. Number of seconds a modem in error-control mode (AT&Q5) waits before disconnection.
S39	Reserved
S40	Bit mapped options (MNP)
S41	Bit mapped options (MNP)
S46	Protocol selection S46=0 turns data compression OFF S46=2 turns data compressiobn ON.
S48	V.42 Feature Negotiation. Determines ON/OFF for V.42 for remote modem.
S50	Speed buffer upper limit
S82	Break handling. S82=3 for break after signal. S82=7 for destructive timed break signal (data process destroyed). S82=128 for in-sequence timed signal.

S-REG	PURPOSE
S86	Connection failure cause code. Defines the cause of a No Carrier result code.
S91	Programmable transmit level.
S95	Extended result codes. Enables various result messages pertaining to an error controlled connection. For S95=0 and ATW1 produce the same display as S95=12 and ATW0.

Now, while I was at it, since many people now have Fax/Modems, I decided that I might as well try to document the Fax commands also. Here is what I came up with:

FAX ACTION COMMANDS

COMMAND	DESCRIPTION & OPTIONS
+FCLASS=n	n=0 Select Data Mode n=1 Select Class 1 Mode n=2 Select Class 2 Mode.
+FCLASS=?	Reports modem fax capabilities response 0, 1=Class 1 only response 0, 1, 2=Class 1 & 2.
+FAEn	Data/Fax auto answer n=1 Modem answers as fax only n=2 Modem answers as fax/data
+FTS=n	Causes the modem to wait for n 10 ms periods before responding with an OK message.
+FTM=n	Transmit Data using the modulation defined below. +FTM=3 V21 ch.2 300bps +FTM=24 V.27ter 2400bps +FTM=48 V.27ter 4800bps +FTM=72 V.29 7200bps +FTM=73 V.17 7200bps long +FTM=74 V.17 7200bps short +FTM=96 V.29 9600bps +FTM=97 V.17 9600bps long +FTM=98 V.17 9600bps short +FTM=121 V.17 12000bps long +FTM=122 V.17 12000bps short +FTM=145 V.17 14400bps long +FTM=146 V.17 14400bps short
+FRM=n	Causes the modem to go into receive mode using the modulation defined below. +FRM=3 V.21 ch 2300bps +FRM=24 V.27ter 2400bps +FRM=48 V.27ter 4800bps +FRM=72 V.29 7200bps +FRM=73 V.17 7200bps long +FRM=74 V.17 7200bps short +FRM=96 V.29 9600bps +FRM=97 V.17 9600bps long +FRM=98 V.17 9600bps short +FRM=121 V.17 12000bps long +FRM=122 V.17 12000bps short +FRM=145 V.17 14400bps long +FRM=146 V.17 14400bps short

COMMAND	DESCRIPTION & OPTIONS class 2
+FDT=	Data transmission.
+FET=N	Transmit page punctuation.
+FDR	Begin/change phase C receive data.
+FK	Session termination.
+FCON	Fax connection response.
+FDCS	Report current session.
+FDIS	Report remode ID.
+FCER	Report confirmation of receive.
+FTSI	Report the transmit station ID.
+FCSI	Report called station ID.
+FPTS	Page transfer status.
+FET	Post page message response.
+FHNG	Call termination with status.
+FMFR?	Identify manufacturer.
+FMDL?	Identify model.
+FREV?	Identify revision.
+FDCC=	DCE Capabilities.
+FDIS=	Current session parameters.
+FDCS=	Current session results.
+FLID=	Local ID.
+FCR	Receive capabilities.
+FPTS=	Page transfer status.
+FCR?	Receive capability.
+FAA	Adaptive answer.
+FBUF?	Buffer size (read only).
+FAXERR	(Fax error value).

DATA & FAX MODEM PROTOCOLS

STD. NO.	DESCRIPTION
AT command set	Command set interface between data equipment (DTE) and data circuit equipment (DCE).
Bell 103	0-300 bps, 2-wire full duplex modem standard.
Bell 212A	1200 bps, 2-wire, full duplex modem standard.

STD. NO.	DESCRIPTION
EIA/TIA-578	Asynchronous facsimile DCE control standard (Class 1).
EIA/TIA-592	Asynchronous fascimile DCEE control standard (Class 2).
MNP2,3,4&5	Error correction/data compression standards for DCEs using public switch network.
MMNP10	Error correction/data compression standards for DCEs using the cellular telephone network.
T.4	Compression/Decompression standards facsimile applications.
T.30	Facsimile protocol standard.
V.17	14.400 bps, 2-wire, half-duplex modem standard.
V.21	300 bps, 2-wire, full-duplex modem standard.
V.22	1200/600 bps, 2-wire, full-duplex.
V.22bis	2400 bps, 2-wire, full-duplex modem.
V.23	2-wire, asymmetric, full-duplex modem standard, utilizing a 1200 bps or 600 bps forward channel and 75 bps backward channel.
V.25	Automatic answering equipment and/or parallel automatic calling equipment on the PSTN including procedures for disabling of echo control devices for both manually and automatically established calls.
V.25bis	Command set interface between data terminal equipment (DTE) and data circuit terminating equipment (DCE).
V.26	2400 bps, 4-wire, full-duplex, modem standard.
V.26bis	2400/1200 bps, 2-wire, half-duplex modem standard for use on the PTSN.
V.26ter	2400 bps, 4-wire, full-duplex modem standard for use on leased lines.
V.27	4800 bps, 4-wire, full-duplex modem.
V.27ter	4800/2400 bps, 2-wire, half-duplex modem standard.
V.29	9600 bps, 4-wire, full-duplex modem standard or 2-wire, half-duplex used for Group 3 compatible facsimile machines.
V.32	9600 bps, 2-wire, full-duplex modem standard.
V.32bis	14.400 bps, 2-wire, full-duplex modem standard.

STD. NO.	DESCRIPTION
V.33	14.400 bps, 4-wire, full-duplex modem standard.
V.42	Error-correction procedures for DCEs using asynchronous conversion.
V.42bis	Data Compression procedures for DCEs using Error correction procedures.
V.FC/V.Fast	19.200 bps, 24.000 bps or 28.800 bps, 2-wire, full-duplex standard for Rockwell Telecommunications
V.34	19.200 bps up to 28.800 bps, 2-wire, full-duplex standard.
V.32 Terbo	19.200 bps, 2-wire, full-duplex standard for ATT. Note: 19.200 bps connect only if both modems support V.32 Terbo.

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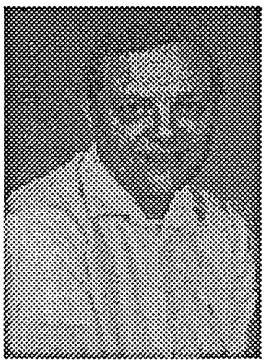
HINTS & TIPS

TUNING UP MY MODEL 4 DESKTOP KEYBOARD

by Kelly Bates



I have three desktop Model 4's. The two I use most frequently have drives :0 and :1 as 720K and :2 and :3 as 360K. Yes, four floppy drives in each computer. The third machine has 360k floppy drives as :0 and :1, and 720K floppy drives as drive :2 and :3. It is primarily used to boot a 360K floppy and it enables me to stay with the standard, being able to boot a single or double-sided 5.25 floppy diskette. I cannot use all of them all the time, so I treat them to some TLC (Tender Loving Care) from time to time.

Most often, it is the keyboards that are in need of the TLC. All my 4's have the old style keyboard (the one that does not have the arrow keys in a cluster). Usually, to tune a key that has quit working, I remove the keycap, insert one end of a straightened-out paperclip into one of the two holes on the top of the exposed key assembly. I use a rotating motion on the paperclip that causes the small rubber cup in the bottom of the assembly to assume a new position and then try the key. I usually go into Basic and do this tuning while the computer is on. This is very easy and takes just a minute to do.

However, if this does not solve the problem, then the key assembly needs to be swapped out. The number keys in the group on the right are in parallel with the top row on the left, so I use one of those since I lose no functions. If you disassemble the computer and remove the keyboard, you will note all the solder connections on the back. Each key assembly has four solder connections although they are not necessarily all used in the keyboard matrix.

Get some solder wick or solder sucker (as I call it) and a 25 watt soldering iron.

Using the wick, 'suck' out the solder on each of the four connections. Some keys have the leads bent over and you must straighten them out as you 'suck' the solder.

Turn the keyboard over, release the latches and pop out the assembly. You can disassemble the key at this point to see the internal parts, if you are curious.

On the sides of the key, left and right of the 'latches' there is a small catch. I use a pocket knife blade to release the catches..

Pull the key apart. There is a small spring in each one, so don't lose it.

You will note the rubber cu[in the bottom with a silicon tip in the middle. I would like to know how to refurbish the silicon. In any event, look in the bottom of the assembly and you'll note two half moon metal contacts facing each other. Use a pencil eraser and clean them.

At this point you may say, 'Boy, was that dirty!' and you can probably use the key now. Reassemble it and see if it works. If it does, then solder it back into where you removed it from. If not, then get another key from the number pad, examine it, clean it, and then install it. Put the bad key in the number key position for 'looks'.

The reason I have revisited this subject, is that yesterday I gave my fourth desktop away. During checkout, the 'X' key did not work to my likingf, so I swapped it out with a spare key I had from a 'salvaged' unit.

If you have read any of my previous articles in TRSTimes in the past two years, you might imagine that my computers are always in need of repair. Not so — I just like to tinker. Since I found homes for five units I gave away last year (and five this year), I had to do some TLC on most so the new user could start out with an operational computer. I throw 'junk' away. None were returned to me for warranty work, so the TLC must have been quality work.

RENUMBER UTILITY
for Model 100
from the TRSTimes Vault

```
10 CLS:CLEAR 2000:MAXFILES=2
20 HT$=CHR$(8):QU$=CHR$(34):AP$=CHR$(39)
30 ON ERROR GOTO 950
40 F$="":LINEINPUT "File? ";F$
50 ER%=0:OPEN F$ FOR INPUT AS 1
60 IF ER% THEN 130
70 IF F$="" THEN MENU
80 ON ERROR GOTO 0
90 INPUT "Start line number";N
```

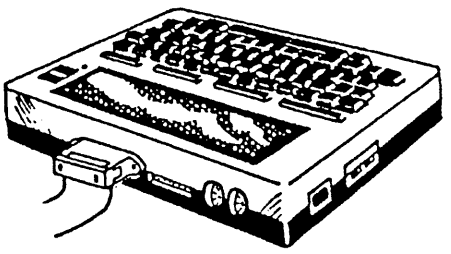
```
100 INPUT "Increment";L
110 IF L<=0 THEN L=10
120 IF N<=0 THEN N=10
130 NL%=0
140 IF EOF(1) THEN 170
150 LINE INPUT#1,L$
160 NL%=NL%+1:GOTO 140
170 CLOSE
180 DIM LN(NL%-1)
190 OPEN F$ FOR INPUT AS 1
200 FOR I%=0 TO NL%-1
210 LINE INPUT#1,L$
220 J%=1
230 IF J%<=LEN(L$) THEN IF
MID$(L$,J%,1)>="0" AND MID$(L$,J%,1)<="9"
THEN J%=J%+1:GOTO 230
240 LN(I%)=VAL(LEFT$(L$,J%-1))
250 NEXT I%
260 CLOSE
270 OPEN F$ FOR INPUT AS 1
280 OPEN "temp$$" FOR OUTPUT AS 2
290 FOR I%=0 TO NL%-1
300 LINE INPUT#1,L$
310 LP%=1:O$=""
320 GOSUB 460:OL%=I%:GOSUB 940:O$=W$
330 IF LP%>LEN(L$) THEN 410
340 GOSUB 670:IF LP%>LEN(L$) THEN 410
350 R$=RIGHT$(W$,4)
355 IF R$="GOTO" OR RIGHT$(W$,5)="GOSUB"
THEN GOSUB 720:GOTO 330
360 IF R$="DATA" THEN GOSUB 750:GOTO 330
370 IF R$="EDIT" OR R$="LIST" OR R$="LLIST"
THEN GOSUB 810:GOTO 330
380 IF R$="THEN" OR R$="ELSE" OR
RIGHT$(W$,6)="RESUME" OR
RIGHT$(W$,3)="RUN" THEN GOSUB 860:
GOTO 330
390 IF RIGHT$(W$,3)="REM" THEN
O$=O$+W$+MID$(L$,LP%):W$="":GOTO 410
400 O$=O$+W$:GOTO 330
410 O$=O$+W$:PRINT#2,O$
420 NEXT I%
430 CLOSE:IF INSTR(F$,".")=0 THEN
F$=F$+".DO"
440 KILL F$:NAME "temp$$.do" AS F$
450 MENU
460 W$="":NU%=0
470 IF LP%>LEN(L$) THEN RETURN
480 C$=MID$(L$,LP%,1)
490 IF C$>="0" AND C$<="9" THEN 540
500 IF C$>="A" AND C$<="Z" THEN 580
510 IF C$=QU$ THEN GOSUB 630:GOTO 470
520 IF C$=AP$ THEN O$=O$+MID$(L$,LP%):
LP%=LEN(L$)+1:RETURN
530 O$=O$+C$:LP%=LP%+1:GOTO 470
540 W$=C$:NU%=-1
550 LP%=LP%+1:
IF LP%>LEN(L$) THEN RETURN
560 C$=MID$(L$,LP%,1):
IF C$>="0" AND C$<="9" THEN W$=W$+C$:
GOTO 550
570 RETURN
580 W$=C$
590 LP%=LP%+1:
IF LP%>LEN(L$) THEN RETURN
600 C$=MID$(L$,LP%,1):
IF C$>="A" AND C$<="Z" THEN W$=W$+C$:
GOTO 590
620 RETURN
630 O$=O$+C$
640 LP%=LP%+1:
IF LP%>LEN(L$) THEN RETURN
650 C$=MID$(L$,LP%,1):O$=O$+C$:
IF C$<>QU$ THEN 640
660 LP%=LP%+1:RETURN
670 GOSUB 460:IF NU% THEN O$=O$+W$:
GOTO 670
680 RETURN
690 IF LP%>LEN(L$) THEN RETURN
700 C$=MID$(L$,LP%,1):IF C$=" " OR C$=HT$
THEN O$=O$+C$:LP%=LP%+1:GOTO 690
710 RETURN
720 IF MID$(L$,LP%,1)="," THEN
O$=O$+",":LP%=LP%+1:GOSUB 690:
IF LP%>LEN(L$) THEN RETURN:ELSE 720
725 GOSUB 860:IF NOT NU% THEN RETURN
730 GOSUB 690:IF LP%>LEN(L$) THEN RETURN
740 IF MID$(L$,LP%,1)="," THEN 720
750 O$=O$+W$:W$=""
760 IF LP%>LEN(L$) THEN RETURN
770 C$=MID$(L$,LP%,1)
780 IF C$=":" THEN RETURN
790 IF C$=QU$ THEN GOSUB 630:GOTO 760
800 O$=O$+C$:LP%=LP%+1:GOTO 760
810 O$=O$+W$:W$="":GOSUB 690:
IF LP%>LEN(L$) THEN RETURN
820 IF C$<>"-" THEN GOSUB 860:
IF LP%>LEN(L$) THEN RETURN
830 GOSUB 690:IF LP%>LEN(L$) THEN RETURN
840 IF C$="-" THEN O$=O$+C$:
LP%=LP%+1:GOSUB 410
850 RETURN
860 O$=O$+W$:W$="":NU%=0:GOSUB 690:
IF LP%>LEN(L$) THEN RETURN
870 IF C$<"0" OR C$>"9" THEN RETURN
880 GOSUB 460
890 NO=VAL(W$):LO%=0:HI%=NL%-1
900 OL%=(LO%+HI%)\2:
IF NO=LN(OL%) THEN GOSUB 940:
O$=O$+W$:W$="":RETURN
910 IF NO<LN(OL%) THEN HI%=OL%-1
ELSE LO%=OL%+1
920 IF LO%<=HI% THEN 900
```

```
930 PRINT "Line number ";W$;" not found in";
LN(I%);:O$=O$+W$:OL%=I%:GOSUB 940:
PRINT "(";W$;")":W$="":RETURN
940 W$=STR$(N+L*OL%):
W$=RIGHT$(W$,LEN(W$)-1):RETURN
950 ER%=0:RESUME NEXT
```

PROGRAMMING UTILITY FOR MODEL 100

from the TRSTimes Vault

```
1 'window subroutine for Model 100
2 '     st={start position}
3 '     wh={width of window}
4 '     lh={length of window}
5 '     gosub 1000
6 '     print@{st+41/81/121/etc},"text"
10 CLS
20 ST=45:WH=27:LH=5:GOSUB1000
25 PRINT@86,"Press any key for another":
PRINT@126,"window. I am waiting.":
PRINT@166," ....."
30 I$=INPUT$(1)
35 ST=100:WH=15:LH=6:GOSUB1000
40 PRINT@141,"One more window":
PRINT@181,"(press any key":
PRINT@221," to continue)":I$=INPUT$(1)
45 ST=1:WH=20:LH=7:GOSUB1000
50 PRINT@42,"This is the last":
PRINT@82,"window. Hope you":
PRINT@122,"liked the demonstra-"
55 PRINT@162,"tion. Press any":
PRINT@202,"key to end....":I$=INPUT$(1)
60 END
1000 'Window
1005 PRINT@ST,CHR$(240);:
PRINTSTRING$(WH,241);CHR$(242);
1010 FORT=1TOLH-2
1015 PRINT@ST+(T*40),CHR$(245);
STRING$(WH,32);CHR$(245);
1020 NEXTT
1025 PRINT@ST+(T*40),CHR$(246);
STRING$(WH,241);CHR$(247);
1030 RETURN
```



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config=y/n	creates config boot up
time=y/n	time boot up prompt on/off
blink=y/n	set cursor boot up default
line='xx'	set *pr lines boot up
alive=y/n	graphic monitor on/off
tron=y/n	add an improved tron
type=b/h/y/n	high/bank type ahead on/off
slow	2 mghz speed (model 3)
cpy (parm,parm)	copy/list/cat ldos type disks
sysres=y/n	disable/enable sysres
spool=h/b.size	spool is high or bank memory
spool=n	temporarily disable spooler
spool=reset	reset (nil) spool buffer
spool=close	closes spool disk file
filter *pr.iglf	ignores 'extra' line feeds
filter *pr.filter	adds 256 byte printer filter
filter *pr.find	translate printer byte to chng
filter *pr.lines	define number of lines per page
filter *pr.tmarg	adds top margin to printouts
filter *pr.page	number pages, set page number
filter *pr.tof	moves paper to top of form
filter *ki.echo	echo keys to the printer
attrib :d password	change master password
filedate=y.n	date boot up prompt on/off
cursor='xx'	define boot up cursor character
caps=y/n	set key caps boot up default
wp=d.y/n	write protect any or all drives
trace=y/n	turn sp monitor on/off
memory=y/n	basic free memory display monitor
fast	4 mghz speed (model 4)
basic2	enter rom basic (non-disk)
sysres=h/b/'xx'	move/sys overlay(s) to hi/bank mem
macro	define any key to macro
spool=d.size='xx'	link mem spooling to disk file
spool=y	reactivate disabled spooler
spool=open	opens, reactivates disk spooling
filter *pr.adlf=y/n	add line feed before printing0dh
filter *pr.hard=y/n	send 0ch to printer (fastest tof)
filter *pr.orig	translate printer byte to chng
filter *pr.reset	reset printer filter table
filter *pr.width	define printer line width
filter *pr.bmarg	adds bottom margin to printout
filter *pr.route	sets printer routing on/off
filter *pr.newpg	set dcb line count to 1
filter *pr.macro	turn macro keys on/off
device	displays current config

All parms above are installed using the new LIBRARY command SYSTEM (parm,parm).: Other new LIB options include DBSIDE (enables double sided drive by treating the "other side" as a new independent drive, drives 0-7 supported) and SWAP (swap drive code table #s). Dump (CONFIG) all current high and/or bank memory data/routines and other current config to a disk data file. If your type ahead is active, you can (optional) store text in the type buffer, which is saved. During a boot, the config file is loaded back into high/bank memory and interrupts are recognized. After executing any active auto command, any stored type ahead data will be output. FANTASTIC! Convert your QWERTY keyboard to a DVORAK! Route printer output to the screen or your RS-232. Macro any key,even F1, F2 or F3. Load *01-*15 overlay(s) into high/bank memory for a memory only DOS! Enter data faster with the 256 byte type ahead option. Run 4MGHZ error free as clock, disk I/O routines are properly corrected! Spool printing to high/bank memory. Link spooling to disk (spooling updates DCB upon entering storage). Install up to 4 different debugging monitors. Print MS-DOS text files, ignoring those unwanted line feeds. Copy, Lprint, List or CATalog DOSPLUS, LS-DOS, LDOS or TRSDOS 6.x.x. files and disks. Add top/bottom margins and/or page numbers to your hard copy. Rename/Redate disks. Use special printer codes eg: LPRINT CHR$(3); toggles printer output to the ROUTE device. Special keyboard codes add even more versatility. This upgrade improves date file stamping MM/DD/YY instead of just MM/YY. Adds optional verify on/off formatting, enables users to examine *01-*15, DIR, and BOOT sectors using DEBUG, and corrects all known TRSDOS 1.3. DOS errors. Upgrade includes LIBDVR, a /CMD driver that enables LIBRARY commands, such as DIR, COPY, DEBUG, FREE, PURGE, or even small /CMD programs to be used within a running Basic program, without variable or data loss.

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DOG-PADDLING THE NET

by Sylvia Cary

I've discovered something about life. You can go to the beach without surfing and still have a good time. You can jump into an olympic-size swimming pool and still get to the other side without having to break into an Australian crawl. Dog-paddling will do just fine.

The same goes for jumping into the Internet or cozying up to CompuServe or any of the other online services. You don't have to be a computer programmer or even a computer fanatic to get what you want from them. Believe me, I know. I couldn't program myself out of a paper bag. In fact, I can't even remember from one day to the next day how to format a disk. I'm a member of that lesser species that programmers refer to (usually with a sneer) as "a user." I use three or four programs for my work -- and that's it! Don't give me any more or I'll get rattled.

I'm a writer. I write non-fiction books and articles. I've been doing so for over twenty-five years, so I remember the old days of typewriters (including the kind you don't have to plug in), typewriter ribbons, onion skin paper, correction tape, and carbon paper. And because the kind of writing I do usually calls for considerable research, I also remember public libraries and those big, heavy green volumes called The Reader's Guide to Periodical Literature which were the springboard for most of my research.

But even a little nostalgia for the "old days" isn't enough to make me forget what a tedious process researching and writing an article or book used to be. As soon as I'd get an article assigment, I'd start procrastinating. I'd put off going to the library for days: It's too hot (cold) (windy) (rainy). Or, I'm too tired (stressed) (busy) (good for this!). Finally, I'd just do it. I'd get dressed, do my hair, put on my make-up, drive "into town," park my car, lug my heavy purse and briefcase up the front steps, and fall in through the incredibly heavy front doors. Once inside, I'd look for a seat as far away as possible from anybody talking to themselves, making spitballs, or snooring. Then I'd go get a stack of Reader's Guides and begin to plow through them, one by one. I'd look up the subject I was interested in (say "teen alcoholism"), write down the reference numbers on little slips of white paper along with my name, address and phone number (this got boring after the 10th or 15th time), hand them all over to the librarian -- and wait.

Finally my number would be called out (or appear on a screen) and I'd go pick up a pile of bound volumes of magazines that had been retrieved from the stacks. As often as not I'd get some of my white slips back marked, "Vol. 2 missing from stacks." Volume 2, of course, was always the volume that contained the article I wanted most!

My next task was to read the articles and take notes (very time-consuming), or xerox them at 15 cents a page (very expensive) and read them at home. By the end of a long day at the library, I considered myself lucky if I went home with copies of three or four articles, some scribbled notes, and a xerox machine bill of under $10.00.

No wonder I wasn't very "prolific." I was exhausted. I was spending days and weeks on what I can now do in minutes and hours, thanks to the Internet, CompuServe, and a hacker-at-heart husband (Lance Wolstrup) who stands over me wielding a printer cable, and threatens: "We have ways to make you computer literate."

But it's worked! For the past six months I've been out there dog-paddling my way around The Net with the best of 'em, and having a splendid time. I recommend it highly: "Woof!"

For example, here's what I did in just one Internet evening:

1) My daughter Claudia, who was about to leave for Vietnam for a two week vacation, came over, and together we logged on to the Internet, zipped over to Vietnam for the weather, latest road conditions and buried mine warnings, then we looked in on a Vietnam news group for tourist updates and gossip, then on to another source for a couple of handy maps.

2) Meanwhile, my good friend Harriet phoned me (on the other line). Recently diagnosed with breast cancer, she had some research questions for me: Did I know the names of local cancer specialists? What books on the subject were best? What

about cancer support groups? What was the latest research on chemotherapy and hair loss? I told her I'd get back to her and I visited CompuServe, ran off a list of about 40 articles from both medical journals and popular magazines, printed out the list, and finally downloaded 8 different articles related to her problem, and mailed them to her. (I could have faxed them, but unfortunately Harriet still lives back in the dark ages: She has a mailbox at the end of her driveway!).

3) Next, e-mail. I have a cousin who lives in London, in-laws who lives in Denmark, a sister who lives in New York and a nephew who's at college in New Haven, Conn. So my daughter and I wrote brief little "Hi, how are 'ya" notes and e-mailed them all.

4) Finally, because I'm also a psychotherapist and write articles on mental health topics, I decided to check out what subjects Psychology Today magazine has been publishing over the last 10 years. I input the proper search terms, and came up with a list of over 900 articles that have appeared in Psychology Today. I printed out the list so I can look it over at my leisure before choosing which articles to download and read. All this without having to dress up, put make-up on, go anywhere, or drop nickles and dimes in a xerox machine.

I could go on and on about how The Net's a treat, but my husband just threw a stick in the water and he wants me to dog-paddle out and fetch it.

MODEL I PROGRAMMING TIPS
from the TRSTimes Vault

Using the OUT command with port 255 can create some interesting effects. Try these shorties and watch what happens.

```
10 FOR X=1 TO 500
20 OUT 255,4:OUT 255,0:NEXT X
```
This causes buzzing.

```
10 FOR X=1 TO 500
20 OUT 255,5:OUT 255,255:NEXT X
```
The video display quivers and vibrates.

```
10 FOR X=1 TO 500
20 OUT 255,4:OUT 255,25:NEXT X
```
The two above effects are now combined.

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MY EXPERIENCES WITH WINDOWS 95

by Roy T. Beck

Recently I acquired a used (but new to me) computer, a 486-33 with 8 Megs of memory, 200 Megs of hard drive and very little else. No mouse, no modem. But when I turned it on, instead of the usual C:>prompt, it came up with a huge Windows 95 display, subtitled June version. Surprise! Since there was zero documentation with the machine (one of my favorite complaints), I had to begin my study with naught but a screwdriver in hand. Yes, you guessed it, the first thing I did after I got it home was to dissect it and attempt to document all the hardware in it.

The machine is located in a mini-tower with a 230 w power supply, very nearly identical to my present machine. I learned it had two cards in it, one being a 256 color VGA card, and the other a drive controller card which had an IDE interface, a floppy interface, COM 1, COM 2, LPT 1, and a game port. After copying down all the accessible brand names, model numbers, CMOS battery info, etc., I began to reassemble the machine. This involved reinstalling the drives, and putting the correct screws into the holes, which the previous technician had not always done. He had put some metric screws where US screws belonged. This kind of sloppiness bugs me also. Since it came without a mouse, I plugged a spare one into it.

Anyway, after reassembly, I fired up the previously working machine, and wouldn't you know it, it refused to boot! It gave me a message to the effect that there was a general failure of the hard drive controller, followed shortly after by a second message saying there was a general failure of the floppy drive controller. Ah, well..... I peered into the internals, and realized I had not inserted the controller card into its socket properly. I corrected that, and rebooted. Up came, initially, the CMOS messages about memory size, etc. This was followed by the Windows 95 sign-on screen. What does one do next? After peering at the various icons around the left edge and top of the screen, I noticed a little "button" at the lower left marked "Start". I pushed it. This brought up the MS OFFICE screen.

I found the "d" key was sticky, so I completely dismantled the keyboard, wiped clean the sliding surfaces of the "d" key plunger, and reassembled it. Seems to work OK now. Since the machine has a 30 day warranty, I could have taken it back and squawked, but the time and mileage to do that made it quicker and cheaper to fix it myself, especially since it was just a mechanical problem with the one key.

About this time, I decided to reboot and explore the CMOS data. The machine has the AMI BIOS, a later version than the one in my other machine, but at least by the same vendor and thus with a similar pattern to its presentation. Among other features, this BIOS has an auto-configuration capability, which allows it to analyze its own hard drive (two in this case) and report the essentials (tracks, cylinders and megs) which allows setup of the machine without having the hard drive vendor's data sheets (not included with this machine). Anyway, I was acquiring knowledge about the machine.

Back to Windows 95. I noted the sign-on screen showed the name of the individual and company to whom this copy of Windows was registered. Anyone know who Flex-Time Computer Services is?

There is an icon in Windows 95 named My Machine. Pressing this revealed the machine had four drives (two hard and a 5.25" and 3.5" floppy) In addition, it showed a folder marked Control Panel and a folder marked Printers. There was a lot of revision of the icon system from Version 3.1 to 95, and this is evidence of some of those changes. (Another author remarked that 3.1 requires you to go to three different icons to establish all the printer characteristics). I tried to change printers, but the program asked me to insert a disk, which naturally did not come with the machine.....Grr. Since the machine was set up for a Laser Model 4P, my model 4 will probably respond correctly to the commands, but I haven't tried it yet.

One of the sign-on tips informed me there were games available under a certain icon. I looked for them, but they weren't there. I assume the previous owner deleted them to discourage his employees from playing games on company time.

A new icon feature I see is the upper right corner of the screen. In V 3.1, there are usually increase and decrease symbols there. W 95 has a third one, a large X, which when pushed, closes the application.

Since I am writing this on the Word 6.0 included in the new machine, I have just run the spell checker, and find it works identically with the Windows version on my other machine. Actually, there is no apparent difference between Word on the two machines, which is what one would expect.

As many of you know, some of the on-line service companies, (Compuserve, etc.) have complained to the Justice Department of the US Government that Microsoft is going to unfairly restrain trade by their inclusion of Internet-type access software in Windows 95, and has asked for the Justice Department to take action to prevent distribution of Windows 95 if it includes such software. You also know that the announced distribution date for Windows 95 is Aug. 24, 1995.

As I am writing this, on Aug. 8, I was interested to hear an announcement today to the news media by the Justice Department that they will not have had time, by Aug. 24th, to reach a determination as to whether Microsoft should be legally restrained from distributing Windows 95! As I understand this, Microsoft is free to distribute Windows 95 on Aug. 24, with an implied threat overhanging that the Justice Department might, at some later date, obtain a Federal Court order which could stop further distribution, recall existing copies already sold, or something else, like a monetary penalty. I don't know. Other news reports lately have quoted other software vendors, including Symantec, producer of the Norton utilities, etc. as specifically requesting the Justice Department NOT to restrict Microsoft's distribution of Windows 95 on the basis that Symantec and others have invested millions of dollars in the development of new utilities, etc. tailored to operate with Windows 95, and that suppression of Windows 95 would work a tremendous financial handicap on them. Obviously, there will be financial impact on some parties, regardless of which way the Justice Department decides to go.

What's my position in all this brouhaha? Speaking purely selfishly as a potential user, I say let Windows 95 be sold without restriction, and let the market place (us buyers and users) determine which way to go. Having been through all the gyrations of the TRS world during the Model I, III and 4 era with multiple DOS's (and with Tandy's sometimes foot-shooting behavior), I am all in favor of standards allowing interchangeability of software. While Microsoft has no particular right to control the PC world, the fact of their control is a fait accompli, and I believe it is a good thing. If some of the competition suffers, well that's the American way. It may not be pleasant for the losers, but overall the PC world is developing in a direction which should benefit all of us users, and Microsoft seems to be leading the way.

I knew there was some way to install older "DOS" programs under Windows 95, so I began looking for it. I actually found two ways to do it. First off, there is an MS-DOS icon in the program tree, so I tried that. Works just like 3.1. You get a DOS screen with the C:> prompt, and you can change directories just as before. And you return to Windows with EXIT, just as under 3.1. But the other way is under an icon in the program tree which invites you to load or install a program, which seems to be the same result as going into DOS.

I loaded my Managing Your Money program which is a DOS program, and found that it appears to work normally, so that's a load off my mind, as that program was one of the reasons I bought this machine; I want to relocate it to Northern California, and leave it there. After that I will simply carry a data disk back and forth instead of lugging my 486-50 1000 miles round trip each month. Next I will load Personal Ancestral File, my genealogy program, but now I am confident it will work as it should. How do the two machines compare? Since the new one is only 33 meg clock rate and the old one is 50, there is a perceptible difference in operating speed in some program operations. Also, Windows 95 seems to take longer to load, although I haven't gotten out my stop watch yet. So far, I haven't found a quick way to start DOS programs. There may be one hidden away, but at this point it is inconvenient. I may move Lance's Menu program on to it and use that. Also, somewhere, there is the equivalent of an AUTOEXEC.BAT file and a CONFIG.SYS, but I haven't searched them out yet. I know they are there, because when I installed the MYM program, it announced it needed to modify one of them (I forget which).

The machine, as received, had a 120 meg and an 80 hard drive, totaling 200 megs. The 120 meg drive has only 10 megs of free space, and the 80 meg has 40 megs of free space. Since the machine has the whole MS-OFFICE package loaded along with Windows 95, this may be par for the course; I really don't know if all that baggage is normal for W-95 or if there is stuff I need to clear out. The program icons in Windows seems to imply there are no other user programs present, so this may be the way one has to go. For the moment, and for my needs, the 50 megs of available free space will be adequate. .

Where next with my "new" machine? Since I have to leave town for a week, I won't get to play with it until I come back. I expect I will put a modem in it so I can operate on the Internet while I am up north. After that, I will look forward to getting my own copy of Windows 95, complete with disks and manuals. I hate having to play guessing games. That's it for now, I'll let you know if there are any surprises.

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LITTLE ORPHAN EIGHTY

August 24, 1995 was a strange day, indeed. All over the world, computer stores were gearing up for what may be the most grandiose and overhyped product introduction in the history of capitalism - a marketing extravaganza of somewhere around one billion dollars — TRSDOS-95.

It is only a software program - and in many people's view, a rather mundane one at that - but through a remarkable combination of shrewd marketing, lucky timing and pure financial muscle, Tandy has turned its debut into a worldwide social phenomenon.

In Southern California, crowds started to hit the stores Wednesday, eager to see what all the fuss was about. CompUSA outlets and many other stores were open at midnight to get a jump on TRSDOS-95 mania, and all were bracing for big crowds through the day.

In Australia, a four-story-high TRSDOS-95 balloon was prepped to sail over Sydney Harbor, accompanied by musicians and dancers.

On the other side of the globe, the Times of London was preparing to print the first fully sponsored edition in its 307-year history: All 1.5 million copies of Thursday's edition were bought by Tandy to be distributed free with a special advertising supplement. In New York, a new TRSDOS-95 light show was created for the Empire State Building.

Tandy is seizing the opportunity to build a consumer-friendly image that it hopes will long outlast TRSDOS-95. Forget the Tandy you may already know: the technically minded, sometimes monopolistic company that has drawn constant scrutiny from government antitrust watchdogs and that critics characterize as arrogant and ruthless.

The new Tandy, now being seared into the world's collective consciousness is a warm, helpful company with a sense of humor that builds friendly, easy-to-use products.

Tandy has broadened its sales channels to reach the broadest audience possible for what remains a relatively complex, technical product. Among the 25,000 retailers that will sell the product are bookstores, video rental shops, home shopping channels and even grocery stores that has not traditionally sold software.

Retailers around the country have put the finishing touches on "World of TRSDOS" displays in their stores in hopes that consumers who come in curious about the TRSDOS-95 frenzy will go home with a copy of the relatively expensive program.

Publishers interested in offering TRSDOS-95 materials have been so pampered and nurtured by Tandy, there will be a glut of new books. An estimated 450 books are available to help users with the product including "The Complete Idiot's Guide to TRSDOS-95" and TRSDOS-95 for Dummies."

Tandy has made an extra effort to reach out to new customers. That's especially important at a time when Tandy's share of the software market has grown so large it can no longer expand by taking market share from competitors.

It is estimated that TRSDOS-95 will sell 30 million copies by the end of the year and 127 million copies by 1998. A strong start will encourage the development of new applications that will in turn attract new customers.

TRSDOS-95 also marks Tandy's entry into the competitive computer on-line business: The Tandy Network can only be reached via TRSDOS-95. Twenty other applications software products, such as word processors and spreadsheet programs, that take advantage of the new program's capabilities will also be launched today.

TRSDOS-95 wouldn't be Tandy's first successful effort to reach the mass consumer. Its first big hit was, of course, TRSDOS 2.3, followed by a string of hits, such as Scripsit, Time Manager, Versafile, Micro Chess and Dancing Demon.

.... and then I woke up. The dream, as it was, had been pleasant, and I smiled at what might have been. Could Tandy have put on a media circus such as this? No way, we all know the sorry way they did business - great computers and lousy everything else.

But, back to reality, if Windows 95 is a success, and I think that it will be, then Microsoft will have crushed the competition. Computing, as we know it, will be changed forever. An interesting thought!

In closing, I would like to thank Jim King, Vernon Hester, Danny Myers, Kelly Bates, Roy Beck, and my wife, Sylvia Cary for submitting articles of interest to the TRS-80 community.

See you next issue.....