

Tape 907
907

New Year's resolutions...

It's a new year! Time to reflect on the past year to see what may be improved. That is the traditional thing to do. But right now I'm more concerned about what I'm going to eat. A trip to the refrigerator shows... nothing! Oh, stomach growls! We have been so busy getting this issue out (oh, growing pains) that we have neglected to go shopping. Now I'm a starving writer! Maybe these pages will be nominated for a Pulitzer? Maybe I'll get a pizza...



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*****
*
* Filename      English Translation      PMODE PCLEAR  Locations  *
*
* LINESCOV     Lines Cover      4      4      7 & 129   *
* BLOCK        Blockbuster      1      2      25 & 144  *
* TYPING       Typing           (2)    (4)    40 & 155  *
* MANSION      Mansion Adventure 0      1      56 & 168  *
* POWER        Power Play       3      4      84 & 190  *
* WORLD3D      3D World (CLEAR 10) 4      4      105 & 207 *
*
* Locations are for the R/S CTR-80. If the first copy of a program
* won't load, try the second. If neither copy loads, return the tape
* for disciplining and a prompt replacement. PMODE and PCLEAR values
* in parentheses are not explicitly set in the programs and may have
* to be entered before loading or running the programs. Otherwise,
* an OM, FC, or SN error may occur. * These programs may use high
* speed. Be sure the computer is slowed down again before doing I/O
* to tape (POKE 65494,0).
*
*
*****
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It's a Color Computer, right? So it should have pretty colors, right? Lines Cover has pretty colors - in PMODE 4 (a two color mode)! It also makes pretty designs. Ah, a joy to watch!

This month's "doingsomethingweirdwithCoCo" program is Blockbuster. It is just the usual 'knock the bricks out of the wall' program at first glance. But it sure is fast! Try LISTing the program. Doesn't it seem a bit short? Folks, most of the program is in machine language! The BASIC part that you can LIST is just the driver. The machine language stuff is AFTER the BASIC program. It loads in at the same time - you just can't list it. This is how it is done:

Let's say that you have a machine language routine that is 100 bytes long (I'll be using decimal numbers so that I won't lose more than half of you). You want to use this routine with a BASIC program you have written. So you first load in the BASIC part. Now there are two bytes in memory (27 and 28) that point to the end of your BASIC program. What you want to do is to add 100 to the end-of-BASIC pointer to make room for the machine language. After making room, then you must stuff the machine language in there. Finally, you must access this machine code from your BASIC program using the new end-of-BASIC pointer and DEFUSR. Below find the step by (faltering) step procedure to do all this:

1) Load in the BASIC program.
 2) Type 'PRINT PEEK(27)*256+PEEK(28)'
 <enter> and remember the value. For the sake of this example we'll assume that you got 15000 for an answer.

3) Add the number of bytes that your machine language routine needs to the value that you got in Step 2. In our example the machine language is 100 bytes long, so we get a value of 15100.

4) Put the value from Step 3 back into memory locations 27 and 28.
 Type 'POKE 27,INT((Step 3 value)/256)'
 <enter>
 'POKE 28,(Step 3 value)-INT((Step 3 value)/256)*256'
 <enter>

5) The hard part. Put your machine language after the BASIC program. The first byte should be put in the memory location defined in Step 2 (15000 in this example). You can use some kind of monitor or have a subroutine in your BASIC program that reads data and POKES the values into the extra room you created (the subroutine and the data can be deleted from your BASIC program once you have done this).

6) You now have a machine language program attached to the end of your BASIC program. At the beginning of the BASIC part you'll need a statement to point to the entry point of the machine language routine:
 'DEFUSR = PEEK(27)*256+PEEK(28)-(length of machine code)+

(entry point of machine code)-(start point of machine code)'

Assuming that the entry point is the same as the start point in our example (it usually is in most machine language routines), the above statement would be:

'DEFUSR = PEEK(27)*256+PEEK(28)-100'.

One of the amazing things about this technique is that you can edit the BASIC program and the machine code will be moved up and down in memory according to the change in the length of the BASIC code (your machine language program must be relocatable). But why doesn't the machine code LIST (or at least show a bunch of garbage)? At the end of the BASIC program there are two zeros in a row. This is a flag to the LIST routine (among others) that says, "end of BASIC, buddy!" All in all, this appears to be one of the cleanest ways to marry BASIC and machine code. But what about the blood test...

Just the program I need (or 'Thank God for word processors'). Typing is a simple typing tutor that has you practice typing words. Good for improving your accuracy.

Did you just type 'PMODE 0: PCLEAR 1'
 <enter> from the keyboard? Good! You are now ready to load Mansion Adventure. This adventure is in the mode of the original adventure programs in that the description of your location can scroll off the screen. If this happens, you can get that description back by just typing 'LOOK'. It will accept three letter abbreviations for commands (ie: 'OPE DOO' for 'OPEN DOOR') and one letter abbreviations for directions (ie: 'N' for 'GO NORTH').

For those of you unfamiliar with adventures, the object is to get to some goal by moving around, observing your surroundings, picking up objects that may be needed in some other place, moving furniture, finding secret words, etc. It is helpful to make a map of where you have been and the directions you can go from various rooms in order to retrace your steps. It's kinda like doing a puzzle, only more frustrating. I haven't completed Mansion Adventure yet, so if you have a question or want a hint from me, you'll probably get an "I don't know" for an answer.

Six copies of each of these 12 forms are needed. Power Play is a game in which you try to stay away from the bureaucrats. There are issues

placed on the screen which you have to avoid, but you must try to get the bureaucrats to run into them until the red tape surrounding the bureaucrats is gone and they are destroyed. Of course, once one set of bureaucrats is gone, a new batch takes its place. Politics was never so much fun...

Have you got an hour? 3D World takes a loooooong time to finish. You input the longitude, latitude, and azimuth and the world is tilted in that perspective. The continents are drawn in point by point, and each point must have its new position relative to the world's rotation calculated. A time consuming process. Did you know that each FRAME of those neat real-time simulations that they showed on TV during the Voyager missions (showing the probes as they flew by the planets and their moons, each with their relative motions) took a day or more to compile on a large mainframe computer! Ouch!!

Be sure to type 'CLEAR l0' <enter> from the keyboard before loading 3D World or it won't load. Also, the author told me about a rare bug that causes a point to be misplaced. I was told this after the tapes had been duplicated, so if that rare out-of-place point is going to bother you, you can fix it by putting 'N2=N2+.000001:' in front of line l000 and changing line l0l0 to read 'A=ATN(N1/N2)'.

The case of the missing '2'...

You may have noticed a vague resemblance between 3D World and last month's World Map. Yes, they are by the same author. But there is a weird error in World Map that a few of you have mentioned (it has never occurred here). It is, "Line 2 is missing". If you recall, you first had to 'PMODE 3: CLEAR l0' <enter> before loading World Map. Then you had to RUN it twice before it actually ran. If you had listed the program before RUNning it, line 2 would have been there (I verified this on my machine and on a machine where this problem came up). If you then ran the program and chose option 2 from the menu, some of you got an 'UL ERROR IN 7' or a UL error in some other line. This occurred because line 2 disappeared! I hope somebody out there has some idea why this happened: I can't figure it out! It didn't always happen on the first run, either. Anyway, if this happens to you, you can either try loading in the program again (the bug is not consistent enough to appear every time) or you can type in line 2 and RUN it one more time:

```
2 READX,Y:IFX=-1ANDY=-1THEN66
```

The colors are clearer...

Last month I talked a little bit about getting 4 colors in the 2 color PMODEs. To reiterate, you do your clearing of the screen and drawing in PMODE 3, then switch to PMODE 4 and you've got 4 colors! Jack Swindell of East Canton, Ohio sent in the following table and demo program to show what the corresponding 4-color and 2-color mode colors are:

Color	SCREEN 1,0		SCREEN 1,1	
	4-color	2-color	4-color	2-color
1	green	darkest green	buff	black
2	yellow	grey	cyan	pale blue
3	blue	dark green	magenta	brown-orange
4	red	green	orange	buff

```

10 PMODE 3,1
20 PCLS 2
30 SCREEN 1,0
40 FOR Z = 1 TO 3: IF Z<2 THEN S=Z ELSE S=Z+1
50 COLOR S,2
60 LINE (25*Z,25*Z)-(255-25*Z,191-25*Z),PSET,BF
70 NEXT Z
80 FOR A = 4 TO 4: FOR C = 0 TO 1
90 PMODE A,1: SCREEN 1,C
100 FOR T = 1 TO 800: NEXT T,C,A: GOTO 80

```

PEEKing into the ROM...

George Ziniewicz of Scottsdale, Arizona has been busy! He has sent me a whole slew of pointers to various things in memory and storage locations of various values. So I'll pass them on (they can be QUITE useful):

Memory Loc(s) in decimal	What it is
25,26	start of BASIC program
27,28	end of BASIC program - start of variable storage
186,187	start of current graphics pages (from PMODE command)
188,189	start of reserved graphics pages (from PCLEAR command)
182	or 482, 782, 1082 current PMODE value (0-4)
178	foreground color (0-3 given in 4 color, 0-1 in 2 color)
179	background color (0-3 given in 4 color, 0-1 in 2 color)
474-481	last CLOAD(M) filename
487,488	beginning address from CLOADM
126,127	ending address from CLOADM
157,158	or 485,486 execute address from CLOADM
274,275	timer value
318-337	USR 0 to 9 pointers
200 & 202	or 500 & 502, 800 & 802, 1100 & 1102 the X & Y value of the last point of the LINE or DRAW command
190 & 192	or 196 & 198 the X & Y value of the last point of the CIRCLE command in PMODE 0 or 1 multiply each of the X & Y vals by 2 in PMODE 2 or 3 multiply the X value by 2

George also sent a few POKES that can be done to make CoCo dance a new jig:

POKE address,value	What it does
65495,0	speeds up CoCo (may not work in some CoCos - test first)
65494,0	slows CoCo back down
182,1 and 185,16	gets 64 x 64 graphics mode (X & Y given in 128 x 128)
4117 359,57	disable automatic return to text screen after a PRINT or INPUT statement
65315,54	disable auto-execute of ROM packs
65315,55	reenable and execute disabled ROM pack

Play that back again...

A few of you have had trouble loading our tapes. With our mass duplication system, some extra noise gets put on the tape (even with shielded cable). This does not seem to bother our Radio Shack CTR-80

recorders. If you have trouble loading a tape (even with a CTR-80), try loading the tape in again after adjusting the volume up and/or down on the recorder before sending the tape back to us. We have no trouble loading ninety percent of the tapes returned to us for replacement. If you are not using a CTR-80, it is worth the investment to get one. Not only for loading our tapes (a lousy reason, matter of fact), but for your own tapes or tapes you get from other sources. The CTR-80 and CoCo are matched to each other, and other recorders (even the higher priced spreads) do not output a signal that is as acceptable to CoCo. Just a fatherly note...

Going in circles...

A listing of a slightly different version of last month's Rotate will appear in February's Radio Shack newsletter! If you haven't seen the newsletter lately, December's issue had a COLOR cover and 48 semi-glossy pages! Big time!!

I think that's enough jabber to start 1982 off. Not to mention the fact that it's late again...

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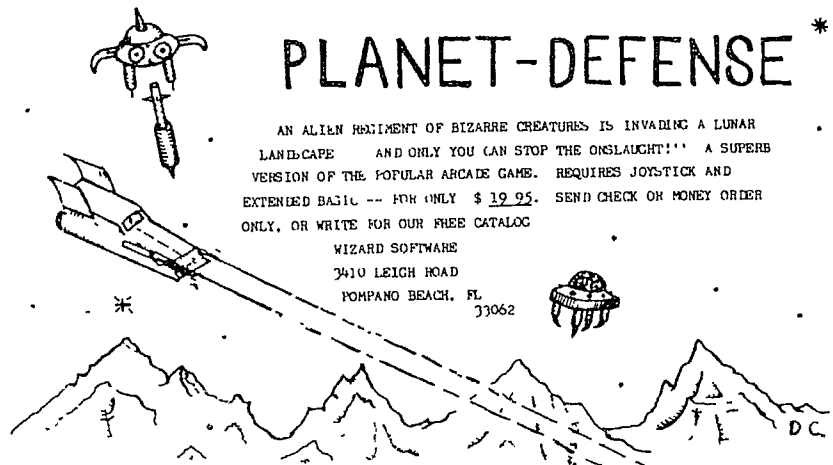
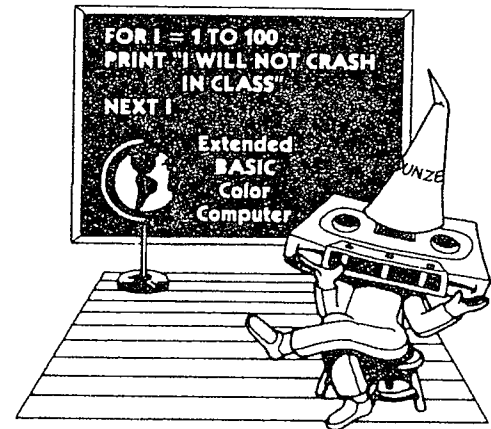
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Dave

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