

Here are some answers to frequently asked questions.

Model II Q and A

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I often receive letters and calls from distraught Model II owners, most of whom are having some difficulty moving up from the Model I.

Here's some of their more frequent questions, with my solutions:

Q: I miss my Model I graphics. Is there any way I can draw with my new computer?

A: Not as well as on the Model I. The grid on the Model II is only 80 horizontal by 24 vertical, about half the size of its predecessor. The best you can do is use the BASIC statements in Fig. 1 in place of SET and RESET.

Q: My disk isn't operating properly. My computer works with other disks, but there's one or two it just refuses to allow me to use.

A: This could be caused by several things, but there are three which I have found most common. First, the disk area where the information you're trying to access is stored could be flawed. Flaws include disks affected by humidity, heat, cold, static electricity, rough handling, and other environmental hazards. If the problem is a foreign object, such as dust or cigarette ash, a few attempts to use the disk might cause the obstruction to fall off, or at least move out of the way. If the prob-

lem is environmental (heat, humidity, etc.), disks will sometimes recover when left in a cool (not cold), dry place for a while.

Overall prevention: Treat disks with more care—the fragility of magnetic media is underrated. Use the protective jacket *whenever* the disk is not in the machine. Don't lay a disk on top of the video display or near a line printer; these produce magnetic fields which could play havoc with your disks.

Second, simple but devastating: you've changed disks and

forgot to use the I command to initialize it. This needs to be done because much of the disk directory is stored in RAM. The directory is more important than it looks; it contains vital infor-

Note: Row signifies vertical (Y) position and column horizontal (X)

For normal video (white on black) the code is as follows:

SET: PRINT @(row,column),CHR\$(26);CHR\$(32);CHR\$(25);
RESET: PRINT @(row,column),CHR\$(32);

For reverse video, use this code:

SET: PRINT @(row,column)CHR\$(25);CHR\$(32);CHR\$(26);
RESET: PRINT @(row,column)CHR\$(32);

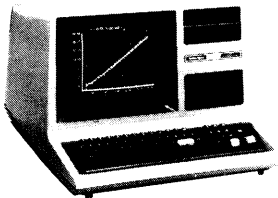
Fig. 1. BASIC Code for SET and RESET

DISK NAME: TRSDOS		DRIVE:0		00/00/00		00.04.13		EOF	
FILE NAME	CREATED	ATTRB	FILE	REC	NMBR	NMBR	SPACE	BYTE	
	MM DD YY		TYPE	LEN	RECS	EXTS	ALLOC	USED	
PAYROLL/TMP	0 0 0	D*X0	F	256	23	2	25	23	0
PAYBAS/TMP	0 0 0	D*X0	F	1	****	1	25	***	***
PAYDATA/TMP	0 0 0	D*X0	F	256	23	1	25	23	0
DOCOM64	11 17 79	D*X0	F	1	167	1	5	1	166
BASCOM64	11 17 79	D*X0	F	256	4	1	5	4	0
COMSUB64	11 17 79	P*X0	F	256	1	1	5	1	0
DOCOM32	11 17 79	D*X0	F	1	167	1	5	1	166
BASCOM32	11 17 79	D*X0	F	256	4	1	5	4	0
COMSUB32	11 17 79	P*X0	F	256	1	1	5	1	0
D V N	4 7 80	D*X0	F	256	1	1	5	1	0
G V	3 3 80	D*X0	F	256	4	1	5	4	0
	0 0 0	D*B0	F	256	****	0	0	***	***
DATM64	11 17 79	P*X0	F	256	4	1	5	4	0
EXDATM64	11 17 79	P*X0	F	256	2	1	5	2	0
DATM32	11 17 79	P*X0	F	256	4	1	5	4	0
EXDATM32	11 17 79	P*X0	F	256	2	1	5	2	0
HERZ50	11 28 79	D*X0	F	1	569	1	5	3	56
	0 0 0	D*B0	F	256	****	0	0	***	***
	0 0 0	D*B0	F	256	****	0	0	***	***
	0 0 0	D*B0	F	256	1	0	0	1	0
	0 0 0	D*B0	F	256	1	0	0	1	0
	0 0 0	D*B0	F	256	1	0	0	1	0
	0 0 0	D*B0	F	256	1	0	0	1	0
	0 0 0	D*B0	F	256	1	0	0	1	0
	0 0 0	D*B0	F	256	1	0	0	1	0
	0 0 0	D*B0	F	256	1	0	0	1	0
	0 0 0	D*B0	F	256	1	0	0	1	0
	0 0 0	D*B0	F	256	1	0	0	1	0
	0 0 0	D*B0	F	256	1	0	0	1	0
	0 0 0	D*B0	F	256	1	0	0	1	0
	0 0 0	D*B0	F	256	1	0	0	1	0
	0 0 0	D*B0	F	256	1	0	0	1	0
	0 0 0	D*B0	F	256	1	0	0	1	0
	0 0 0	D*B0	F	256	1	0	0	1	0

Fig. 2. Directory of Uninitialized Diskette

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mation about the location of each file, and what locations are available. If you change disks and don't initialize, the operating system tries reading and writing to the new disk, using the directory from the old one. This results in areas on the disk being destroyed, and blank file names often show up in a directory as a signal of this (Fig. 2). If the directory looks like this, try typing I (or SYSTEM "I" from BASIC). This will work if you haven't written to the disk (SAVE, PRINT#1, PUT, etc.). But if a directory taken after initialization reveals blank file names, it's too late. Prevention: make it a habit to use the I command before your disk write operations. It doesn't

take long, and SYSTEM "I": SAVE"FILE/TXT" is pretty easy to use. SYSTEM "I" also makes a good first program line, if your program uses disk I/O.

Third, a disk is left in the drive after the power is shut off. The heads may release some stored energy at this time, and guess where it ends up? On your disk. The only solution is prevention — *don't* leave a disk in any drive when you power down (or up, just to be on the safe side). This is an unstable state for any electronic device.

Q: I have a BASIC program from my old Model I that uses PEEK and POKE, and I want to put it on my new Model II. Can I?

A: Yes, in most cases. Before

61440	F000	D5	PUSH DE
61441	F001	E1	POP HL
61442	F002	46	LD B, (HL)
61443	F003	23	INC HL
61444	F004	5E	LD E, (HL)
61445	F005	23	INC HL
61446	F006	56	LD D, (HL)
61447	F007	D5	PUSH DE
61448	F008	E1	POP HL
61449	F009	5E	LD E, (HL)
61450	F00A	23	INC HL
61451	F00B	56	LD D, (HL)
61452	F00C	2B	DEC HL
61453	F00D	EB	EX DE,HL
61454	F00E	7E	LD A, (HL)
61455	F00F	EB	EX DE,HL
61456	F010	77	LD (HL),A
61457	F011	C9	RET
61458	F012	00	NOP
61459	F013	00	NOP
61460	F014	00	NOP

To save, type DUMP PEEK/LOD START = F000,END = F011,RORT = R

Fig. 3. Code for PEEK User Routine

61488	F030	D5	PUSH DE
61489	F031	E1	POP HL
61490	F032	46	LD B, (HL)
61491	F033	23	INC HL
61492	F034	5E	LD E, (HL)
61493	F035	23	INC HL
61494	F036	56	LD D, (HL)
61495	F037	D5	PUSH DE
61496	F038	E1	POP HL
61497	F039	5E	LD E, (HL)
61498	F03A	23	INC HL
61499	F03B	56	LD D, (HL)
61500	F03C	23	INC HL
61501	F03D	7E	LD A, (HL)
61502	F03E	EB	EX DE,HL
61503	F03F	77	LD (HL),A
61504	F040	C9	RET
61505	F041	00	NOP
61506	F042	00	NOP
61507	F043	00	NOP
61508	F044	00	NOP

To save, type DUMP POKE/LOD START = F030,END = F040,RORT = R

Fig. 4. Code for POKE User Routine

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you upgrade, though, you have to find out why PEEK and/or POKE are used, and see if there is really a need. If, for instance, POKE graphics are used to write to screen memory, you'd better stick with PRINT @ statements, as screen memory is only accessible through a supervisor call on Model III. If, however, you find that you *must* use PEEK or POKE, use the code in Figs. 3 and 4 (see Fig. 5 for information on entering machine language

programs). Use the accompanying BASIC program in Fig. 6.

Q: I just jumped from BASIC to DOS using System. Is there any way to go back to BASIC without losing my program?

A: Enter the program in Fig. 7 (again, following the guidelines in Fig. 5 for entry and storage). As long as you returned from BASIC and didn't use any DOS commands that dump or zero memory, the return will always be successful.

To load the code into memory:
From TRSDOS READY, type
DEBUG ON (enter)
DEBUG (enter)

When the "?" appears on the screen, reply with "M" followed by the starting address of the code. Tap the F1 key to position the cursor for entry of the code. Enter the code as it appears, in hex. When entry is complete, tap the F2 key to store it in memory, then "S" to return you to TRSDOS READY mode.

To store the program, type
DUMP name START = address1, END = address2, RORT = X (enter) where "name," "address1," "address2," and "X" are replaced with the values given for each program. So, to save the J2800 program, type
DUMP J2800 START = F100, END = F102, RORT = T (enter)

To call the program from TRSDOS READY, type name (enter) where name is the program name used in DUMP. From BASIC, use SYSTEM "name".

Fig. 5. Loading and Saving a Machine Language Program

The following BASIC code will make PEEK and POKE easier to use in your programs:

```
60000 SYSTEM "PEEK/LOD":SYSTEM "POKE/LOD":DEFUSR1 = &HF000:DEFUSR2 = &HF030
```

To convert a memory address into integer format (which must be done before each PEEK or POKE call) where address is contained in X and returned as an integer in A%:

```
65000 IF X >= 32768 THEN A% = (-32768) + (X - 32768):ELSE A% = X
65010 RETURN
```

To perform a PEEK (read from memory address X):

```
65100 GOSUB 65000'Address is already in X - Convert to integer A%
65110 A$ = MKI$(A%)'Prepare address
65120 A$ = USR1(A$)'Call PEEK
65130 B% = ASC(A$)'B% now contains value of memory address X
```

To perform a POKE (place value V% at memory location X):

```
65200 GOSUB 65000'Convert X to integer A%
65210 A$ = MKI$(A%)'Prepare address
65220 A$ = A$ + CHR$(V%)'Tack on value to store at X
65230 'NOTE: Value (V%) must be between 0 and 255, inclusive
65240 A$ = USR2(A$)'Call POKE - V% is now stored at memory location X
```

Fig. 6. BASIC Code for use with PEEK and POKE

61952	F200	C3<0028>	JP <NN> * TO:2800
61955	F203	00	NOP
61956	F204	00	NOP
61957	F205	00	NOP

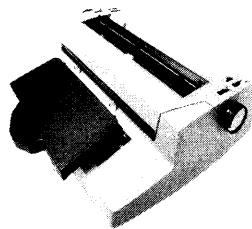
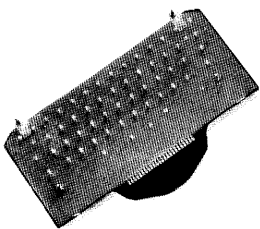
To save, type DUMP J2800 START = F200, END = F202, RORT = T

Fig. 7. Code for J2800 user routine.

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Q: I have a machine language program from the Model I which contains various calls to ROM routines, for routines such as keyboard input and disk I/O—Is there an equivalent on the Model II?

A: Yes, there is. The routines are named Supervisor Calls (SVCs). They are called by loading the arguments into the proper registers and executing an RST 8 instruction.

A list of commonly used rou-

times is in Fig. 8, and the DOS manual covers them nicely in pages 4/13 to 4/84.

Q: I have a program in BASIC which must be secured from Break. Can I disable the Break key temporarily?

A: Yes. The codes in Figs. 9 and 10 will permit you to disable, or enable, the Break key. Be careful to use them only inside BASIC code. Remember to enable the Break key before program execution is over. ■

SVC CODE	Description
15	Read the disk ID from any drive
25	Set a timer to generate an interrupt after n seconds
36	Jump to TRSDOS READY mode
38	Execute a DOS command
4	Fetch a character from the keyboard
5	Fetch a line from the keyboard
7	Clear the screen with normal/reverse video
8	Output a character to the display
9	Output a line to the display
11	Read video memory
18	Send a character to the printer
19	Send a line to the printer
40	Open a disk file
35	Read from a disk file
44	Write to a disk file
42	Close a disk file
41	Delete a disk file
20	Generate a random number
21	Perform binary-decimal/decimal-binary conversions
23	Multiply/divide 16 bits by 8 bits
24	Perform binary-hex/hex-binary conversions

Fig. 8. Sample supervisor calls.

61584	F090	3E<03>	LD A,<N> * <03>
61586	F092	21<0000>	LD HL,<NN> * <0000>
61589	F095	CF	RST 8
61590	F096	3E<03>	LD A,<N> * <03>
61592	F098	21<9CF0>	LD HL,<NN> * <F09C>
61595	F09B	CF	RST 8
61596	F09C	C9	RET
61597	F09D	00	NOP
61598	F09E	00	NOP
61599	F09F	00	NOP

To save, type DUMP DISABLE/BRK START = F090,END = F09C,ROTT = T

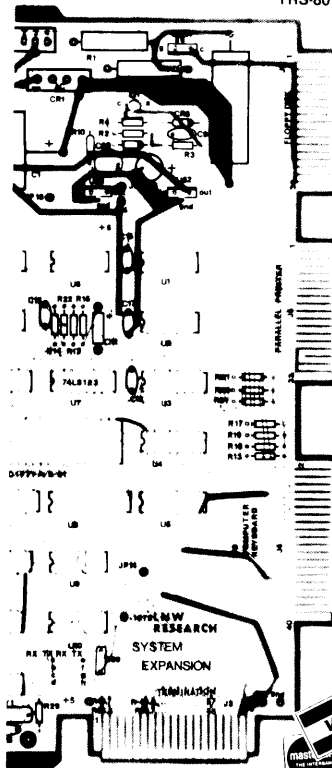
Fig. 9. Code for DISABLE/BRK user routine.

61584	F090	3E<03>	LD A,<N> * <03>
61586	F092	21<0000>	LD HL,<NN> * <0000>
61589	F095	CF	RST 8
61590	F096	3E<03>	LD A,<N> * <03>
61592	F098	21<0260>	LD HL,<NN> * <6002>
61595	F09B	CF	RST 8
61596	F09C	C9	RET
61597	F09D	00	NOP
61598	F09E	00	NOP
61599	F09F	00	NOP
61600	F0A0	00	NOP

To save, type DUMP ENABLE/BRK START = F090,END = F09C,ROTT = T

Fig. 10. Code for ENABLE/BRK user routine.

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