MILLERS GRAPHICS

THE SMART PROGRAMMER

VOLUME ONE

Over the past few months we have received numerous letters and survey forms containing nice comments and questions about the Smart Programming Guide For Sprites. We have enjoyed them very much and we would like to thank you for returning the survey forms.

We are planning on publishing 'The Smart Programmer' on a regular basis and look forward to receiving your comments, tips and questions on programming and using the Texas Instruments computers.

Many of the questions we received were on how to modify the General Bar Graph program to show a scale that is lower than 0-200. Listed below are the program lines that have been changed and added to allow a low scale of 0-.25. The balance of the program listing is on pages 64 & 65 in The Smart Programming Guide For Sprites.

```
160 SUB GRAPH(G$(),G()):: CA
LL CLEAR :: CALL SCREEN(7)::
 FOR I=1 TO 8 :: CALL COLOR(
I,2,12):: NEXT I :: CALL COL
OR(12,13,4,9,13,4)

170 CALL CHAR(124,"010101010
10101010000000001",62,"00000
0000001",94,"00000001010101"
,96,"00FFFFFFFFFFFFFF")

180 M=0 :: C$=RPT$(RPT$(CHR$
(125),4)&CHR$(124),5):: DISP
LAY AT(1,(29-LEN(G$(0)))/2):
G$(0): : :"  ^>>>>^>>>>^>>>>
^>>>>^>>>>^"

190 FOR I=1 TO 20 :: IF G$(I
)<>"" THEN DISPLAY AT(I+4,4)
:C$ :: M=MAX(M,G(I))ELSE 205

205 IF M>8 THEN C=1 :: GOTO
210 ELSE C=100 :: M=M*100

206 FOR I=1 TO I-1 :: G(I)=G
(I)*100 :: NEXT I

215 IF M>100 THEN M=INT((M-1
)/200)+1 ELSE IF M>50 THEN M
=.50 ELSE IF M>25 THEN M=.25
 ELSE M=.125

220 DISPLAY AT(2,1):"SCALE X
"&STR$(MX)&" > ="&STR$(M*8/C
)

225 IF C=100 THEN DISPLAY AT
(3,3):USING "0 #.## #.## #.#
# #.## #.##":40/MX*M/C,80/MX
*M/C,120/MX*M/C,160/MX*M/C,2
00/MX*M/C :: GOTO 240

240 C=0 :: FOR I=1 TO I-1 ::
 DISPLAY AT(I+4,1)SIZE(3):G$
(I):: IF G(I)<M*8 THEN 260
```

Another popular question was regarding the shooting program on page 35 and how to incorporate joysticks into it. Listed below are the lines that have been changed or added to the program. The IF ABS(X-C)<9 statement in line 115 sets the tolerance to allow a hit or not. To make it harder use a smaller number such as 4, 5 or 6. The actual tolerance = (number-1)*2

ie: (9-1)*2 = 16 pixels tolerance.

```
100 CALL CLEAR :: CALL SCREE
N(2):: CALL CHAR(46,"0000001
818"):: CALL SPRITE(#2,94,16
,180,100)
```

GOTO Page 2

```
115 CALL JOYST(1,X,Y):: CALL
 MOTION(#2,0,X*3):: CALL KEY
(1,X,Y):: IF Y=0 THEN 115 EL
SE CALL POSITION(#3,Y,X,#2,R
,C):: IF ABS(X-C)<9 THEN 120

116 CALL SPRITE(#1,46,16,R,C
,(Y-R)*.49,0):: CALL SOUND(4
76,-3,14):: CALL SOUND(120,1
10,30):: CALL DELSPRITE(#1):
: GOTO 115

120 CALL SPRITE(#1,46,16,R,C
,(Y-R)*.49,(X-C)*.49):: CALL
 SOUND(476,-3,14)
```

Here are two more PEEK addresses that you might find useful. The first one is from the SPCHRD equate (speech read) located at Hex >9000.

CALL PEEK(-28672,A)

IF A=96 THEN.....the Speech Synthesizer is attached to the computer.
IF A=0 THEN.....the Speech Synthesizer is not attached.

This one is located in our CPU Scratch pad Ram at Hex >8370. This is a two byte address that contains the highest free VDP Ram address. If you do not have Mem-Expansion your program is loaded into VDP Ram from the bottom up.

CALL PEEK(-31888,A,B)
Highest address=A*256+B

If you have Mem-Expansion, the Mini Memory cartridge or the Editor Assembler cartridge you can CALL LOAD(-31888,63,255) to shut down ALL of your Disk Drive Files (same as CALL FILES(0) which is not allowed as a command) and then type in NEW or edit your program to open up the memory space. The easiest way to turn your Disk Drives back on is to type in BYE.

CALL LOAD (-31888,55,215) and then RUN, NEW or editing your program in Extended BASIC with Mem-Expansion will also turn your Drives back on. It is possible to use these CALL LOAD's in your programs if you have Memory Expansion, but they haven't been fully tested so make sure that you have backups before you RUN the program or you may lose it!

NOTE: Any Disk accesses with the Drives shut down will lock up your computer and you will have to shut it off and then back on to regain control.

We are currently working on a new book entitled 'The Smart Way To Award Winning Programming'. This book will cover many of the topics on our survey for the Extended BASIC language. It is based around a full console memory program that won First Place in a contest against Atari, Apple and TRS 80 programs. The documentation will be like The Smart Programming Guide For Sprites and will contain the complete program listing in 28 column format to match your screen output.

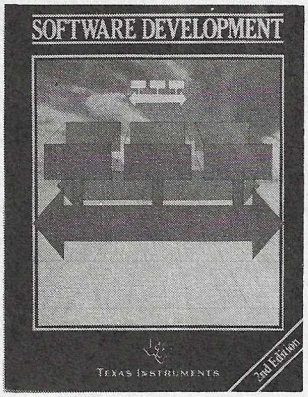
This book is an in depth course in Extended BASIC programming that will take you well beyond the Smart Programming Guide For Sprites. It contains extensive sprite use graphics, sounds and logical and relational expressions that will show you how to write an Award Winning Program! It will be released sometime in October in two versions. For those of you who love to type it will come in book only form and for everyone, like me, that hates to type it will be available in book and cassette form. The Book and cassette will contain Keyboard, Joystick and menu driven Diskette versions of the program.

As soon as it is ready we will mail you a full color brochure with screen photos and a complete description of the book. If you liked our first book you're gonna love this one!

TI PROFESSIONAL COMPUTER

If you own a TI PC we would like to hear from you. We are planning on starting a newsletter for information and programs on the TI PC. Write to us and let us know what you would like to see in the newsletter and also let us know how your system is configured. Do you have MS-DOS or CP/M, the 3 planes graphics board, a hard disk drive, what type of monitor etc. With your help we could end up with a much needed and informative newsletter.

Many of you sent in requests for information on Assembly Language so we checked around and came up with the two books advertised in this newsletter. They are both excellent books which are written as an introduction to programming and microprocessors.



This 434 page Software Development book is an excellent book that covers many different aspects of program design and development. It is divided into the following 8 chapters:

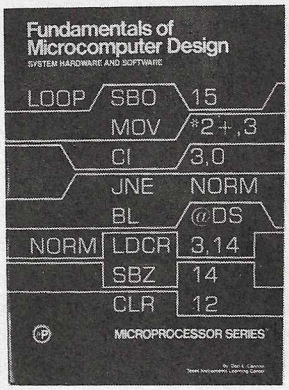
1 -	Introduction	23 pages.
2 -	Software Development	18 pages.
3 -	Development Tools	20 pages.
4 -	Software Design	54 pages.
5 -	Component Software	30 pages.
6 -	Microprocessor Pascal	99 pages.
7 -	Power Basic	63 pages.
8 -	Assembly Language	127 pages.

All eight of the chapters are full of valuable information but chapter 8 should be a real eye opener for everyone struggling with the Editor Assembler manual. This chapter covers much of the introductory material that has been missing up until now.

If the rumors about the 99/8 turn out to be true, chapter 6 will prove to be a great aid for everyone that is planning on purchasing this computer.

If you truly want to write quality software this book is a great place to start.

ORDER NUMBER - MP29 PRICE 9.50



The Fundamentals of Microcomputer Design is a 478 page book that was designed as a text book to teach students about the 9900 series microprocessors. It contains 12 fact filled chapters about the microprocessor and its support chips that are in our 99/4(A) computers. Even though it was originally written to be used with the U89 University board, which uses a 9900 microprocessor, it is an excellent introduction to the how and why our micro's do what they do. Many of the Assembly Language instructions are broken down into simple to understand terms complete with flow chart diagrams.

The 12 chapters are as follows:

1	Basic Microcomputer Concepts	32 pgs.
2	Software Features of Micro's	38 pgs.
3	Microprocessor Instruction Sets	47 pgs.
4	Programming Methods	31 pgs.
5	Microcomputer Programs	41 pgs.
6	Advanced Software Techniques	42 pgs.
7	High Level Language Programming	53 pgs.
8	Hardware Features of Micro's	31 pgs.
9	Microcomputer Memory Design	46 pgs.
10	Micro Input/Output Design	49 pgs.
11	Advanced Hardware Design	41 pgs.
12	System Design Example	27 pgs.

ORDER NUMBER - MP30 PRICE 15.00

TO ORDER: Send check or money order to **MILLERS GRAPHICS 1475 W. CYPRESS AVE. SAN DIMAS, CA 91773**

All foreign orders payable in U.S. currency.

15 DAY MONEY BACK GUARANTEE. We do not directly manufacture these books so please allow 4 to 6 weeks for delivery. If it is possible we will ship via our usual fast service.

Name _____

Address _____

City _____ **State** _____ **Zip** _____

QTY.	ORDER NUMBER	ITEM	TOTAL

I've enclosed a: ☐ Check ☐ Money Order ☐ Cashier's Check

Sub Total	
Calif. Res. Add 6½%	
Shipping & Handling	1.50
Total	

In the amount of $_____

THE SMART PROGRAMMER is published by **MILLERS GRAPHICS,** 1475 W. Cypress Ave. San Dimas, CA 91773.

MILLERS GRAPHICS
1475 W. Cypress Ave.
San Dimas, CA 91773