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INSIDE

Column One

I didn't give it a second thought when I sat down to write this column for Al while he was on vacation, but somehow it is a little different when suddenly it's "all yours". Needless to say, we will all miss Al's sage wisdom, insight and friendly nature. So, for now, this is what you'll get!

Most obvious, this month, is the section devoted to software. This **free** listing was so popular last year that we just had to offer it again So far the listings are about 95% new. On top of that, there is just no way we could get them all in this issue. You know what that means: you still have a few more days to get your material into PEEK. We should add too, that if you want to re-run your last year's listing, let us know pronto! A phone call will do.

Once again, you have a jam-packed issue. Read it closely, because there are a bunch of little gems buried between the covers - things like:

Well, WP6502 is worked over twice, in particular with regard to the forced pagination. But how about the users of the U version? Narry a word! PEEK [65] to the rescue again. I took some time and located the same table in the U version. To set the default for paging to 0, just LOAD the various versions of WP6502, add this line (5 POKE 24601,0) and SAVE it. Those of you with time on your hands can play with the "Via WP6502" default starting at 26501.

Rick Trethewey's Assembly Language class is getting exciting. Because I have peeked at lesson #9 (passing variables, strings too, via X=USR(X)), I can tell you that you had better make sure that you have followed along from the beginning. You will find it rewarding.

For those of you who are running canned software and would like to try your hand at writing a program, Beginner's Corner continues its introduction to BASIC programming with several tips that even some of the more polished programmers may have missed.

Just because you are a serial or business user, don't bypass Leroy Erickson's ROM routine this time. Remember that the ROM handles serial systems too and that an understanding of this routine will explain a number of otherwise mysterious happenings.

Your life can be made over on your ROM BASIC machine if you type in Earl Morris's ROM line editor.

David Weigle has given the more serious OS65U programmer a whole new bag of tricks with his "INPUT Mask". It will save you time, effort and a good chunk of memory.

A SPECIAL NOTE TO BUSINESS USERS: It can be done. We have, frankly, pleaded for business articles. Well, here is one that will make a lot of folks green with envy. Russ Daugherty not only found the time to put it all down on paper, but what a job he did - and what a system he has put together. It all goes to show what a computer illiterate businessman (at least he was in the beginning) can do if he puts his mind to it. This article should really turn you on - and the real goodies are in Part II, which will be in next month's issue. So, business users, take note! Don't drop the ball now. Let us hear from you, too!

In a similar vein, your calls and letters indicate that you would like to see more software reviews. We agree. But you have an advantage over us. Chances are that you have been using, and therefore know, the package. When we review, we start from square one to learn the package. That takes lots of time. Use your advantage, collect your thoughts and put pen to paper and tell us all what you like and/or dislike about the packages you are now using. We would like to see at least one review each month. That is an impossible task without your help and assistance.

Do you read ads? Most readers tell us that they do. There are some very interesting ones this time. Check them out!

Meanwhile, visit the Comdex Show in Las Vegas, Nov. 14-18. ISOTRON will have a booth and some VERY interesting things to show you. We will, of course, give you a report in a later issue. Next month: ISOTRON's 515 board and DBI's new machine. *Eddie*

6502 ASSEMBLY LANGUAGE PROGRAMMING CLASS

PART IV

By: Richard L. Trethewey
Systems Operator for the
OSI SIG on CompuServe

So far, we have seen that the X and Y registers can be used as values to be added to the addresses contained within instructions to the 6502. When used in this way, the registers are referred to as indices. The underlying principle here is that the 6502 is not limited to the absolute addresses contained within actual instructions, but that it also has the ability to take other factors into consideration. The different ways in which the 6502 accesses memory are referred to as addressing modes. The 6502 has 10 separate addressing modes. Not every instruction has all of the addressing modes available to it (although, this situation is remedied in some of the newer versions of the 6502 chip). Let's look at the various addressing modes.

(1) Immediate LDA #$00

The immediate mode fetches the value in the memory location immediately after the instruction itself. In this case, the value $00 would be loaded into the accumulator. This instruction is two bytes long.

(2) Absolute LDA $FFFF

The absolute mode fetches the contents of the memory address indicated by the two bytes immediately following the instruction. The instruction is 3 bytes long with byte #2 holding the LSB and byte #3 holding the MSB of the address from which the value will be obtained.

(3) Absolute Page Zero LDA $FF

We have already noted that page zero (i.e. memory locations $00 through $FF) is treated in a special way by the 6502. The absolute page zero mode is one case where this special treatment comes to light. The instruction is 2 bytes long with the memory location immediately after the instruction holding the LSB of the address from which the value will be obtained. The MSB is not needed since the instruction itself forces the MSB to be $00. There are two effects of this feature. First, obviously, the instruction length is shorter, thus requiring less memory within the program. Second, since the fetch to find the MSB is eliminated, the instruction executes faster.

(4) Indirect X LDA ($00,X)

Page Zero has another important feature. The contents of two memory locations within page zero can be used to hold a 16 bit memory address. The X and Y registers can use such an address, in conjunction with their own contents, to point an instruction to differing memory addresses. In the Indirect X addressing mode, the actual page zero location which will be used as a pointer is determined by the sum of the contents of the X register and the page zero location referred to in the instruction. In the example above, assume the contents of the X register was zero. In that case, the accumulator would be loaded with the contents of the memory address pointed to by the contents of memory locations $00 (the LSB) and $01 (the MSB). Thus, if $00 held a zero, and $01 held $60, the accumulator would then be loaded with the contents of memory location $6000. However, if the X register held a 2, the contents of $02 and $03 would be used to find the effective address. Assuming X=2, $00 and $01 still held $00 and $60 respectively, but $02 holds $08 and $03 holds $90, then the accumulator would be loaded with the contents of memory location $9008.

(5) Indirect Y LDA ($00),Y

The Indirect Y addressing mode is significantly different than the Indirect X mode. In this mode, the effective address of the instruction is the sum of the contents of the Y register and the 16 bit address pointed to by the page zero location(s) in the instruction. If location $00 holds a zero and $01 holds $60, then in this example, the effective address is $6000 + Y (i.e. if Y=1, the address is $6001, etc.).

(6) Zero Page,X LDA $00,X

The Zero Page,X mode acts much like the Indirect Y mode in that the effective address for the instruction is the sum of the page zero address referred to in the instruction and the contents of the X register. In the above example, if X=0 then the accumulator would be loaded with the contents of location $00. If X=1, then the contents of location $01 would be loaded into the accumulator. This is a two-byte instruction. NOTE: If the sum of the referred to page zero location and the contents of the X register is greater than $100, then the effective address is the sum less $100. The MSB is always assumed to be $00.

(7) Zero Page,Y LDX $00,Y

Zero Page,Y is identical to Zero Page,X in its operation, but uses the Y register as the index. This addressing mode is limited to the instructions LDX and STX only.

(8) Absolute,X LDA $6000,X

The Absolute,X mode in yet another indexed instruction. In this case, the effective address is a 16-bit address that can point to any location from $0000 through $FFFF. The effective address is the sum of the address referred to in the instruction and the contents of the X register. In the above example, if X=1 then the accumulator would be loaded with the contents of location $6001. This is a 3 byte instruction.

(9) Absolute,Y LDA $6000,Y

The Absolute,Y mode is identical to the Absolute,X mode except that the Y register is used as the index.

(10) Indirect JMP ($6000)

The Indirect mode is similar to the Indirect,X and Indirect,Y modes in that the effective address is determined by the contents of the memory location referred to in the instruction. This mode is limited to the JMP instruction only. In the above example, if location $6000 holds a $79 and location $6001 holds $2E then when this instruction is executed, the program would JMP to location $2E79.

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The power of the 65Ø2 instruction set is in the indexed instructions where the X and Y registers are used in conjunction with the addresses in the executed instructions to provide a wide range of effective addresses resulting in fast and compact code. It is important to remember that the indirect addressing modes all compute their effective addresses on the contents of two memory locations with the memory address referred to in the actual instruction holding the LSB of the effective address and the next sequential address holding the MSB of the effective address. Again, this low/high format is used throughout the 65Ø2 instruction set. For example, when the assembler sees:

```
1Ø      *=$4ØØØ
2Ø;
3Ø      LDA $6ØØØ
```

then when the code is assembled to memory, location $4ØØØ would hold $AD (which is the 65Ø2 opcode for LDA using the absolute mode), location $4ØØ1 would hold $ØØ (the LSB) and location would hold $6Ø (the MSB).

★

OSI ROM ROUTINES

(Part 5)

by: Leroy Erickson
Courtesy of OSMOSUS NEWS
3128 Silver Lake Road
Minneapolis, MN 55418

This month I'll cover SYNMON page 6, the serial system monitor. This page occupies locations $FEØØ to $FEFF in any serial system, that is any system in which the primary input/output device is an external terminal rather than a memory mapped video display and a keyboard.

This monitor is completely different from the video system monitor. It provides only 3 commands: 'L' (Load Memory), 'P' (Print Memory) and 'G' (Go to another program). I'll describe each of these in detail.

The load command takes the first 4 hex characters after the 'L' and uses them as a load address. From that point on, it takes pairs of hex characters and stores them as data bytes at successive addresses. Any non-hex characters are simply ignored except for 'R'. This is the "exit" command and causes a return to the command loop. Otherwise,

```
                 ; ***************************************
                 ; ***                                 ***
                 ; ***        C4P BOOT ROM PAGE 6      ***
                 ; ***                                 ***
                 ; ***    Serial System ROM Monitor    ***
                 ; ***                                 ***
                 ; ***   Comments by  Leroy Erickson   ***
                 ; ***           June 1982             ***
                 ; ***                                 ***
                 ; ***************************************
                 ;
                 ; * Entry Address is $FE35 or ($FEFC) *
                 ;
00FC=             H00FC=$00FC
00FD=             H00FD=$00FD
00FF=             H00FF=$00FF
                 ;
0129=             H0129=$0129 ; Y Register Byte
012A=             H012A=$012A ; X Register Byte
012B=             H012B=$012B ; A Register Byte
012C=             H012C=$012C ; Status Register
012D=             H012D=$012D ; Stack Pointer
012E=             H012E=$012E ; Go Address,High
012F=             H012F=$012F ; Go Address,Low
                 ;
FC00=             SERPRT=$FC00 ; Serial port
                 ;
FE00                     * = $FE00
                 ;
                 ; * Get a char from serial port & echo it *
                 ;
FE00 AD00FC  HFE00  LDA  SERPRT    ; Test serial ctrl
FE03 4A             LSR  A         ;  register
FE04 90FA           BCC  HFE00     ; Loop till ready
FE06 AD01FC         LDA  SERPRT+1  ; Get the char
FE09 297F           AND  #$7F      ; Strip the parity
                 ;
                 ; * Print a character *
                 ;
FE0B 48      HFE0B  PHA            ; Save this char
FE0C AD00FC  HFE0C  LDA  SERPRT    ; Test control reg
FE0F 4A             LSR  A
FE10 4A             LSR  A
FE11 90F9           BCC  HFE0C     ; Loop until ready
FE13 68             PLA            ; Then regain char
FE14 8D01FC         STA  SERPRT+1  ; Send it
FE17 60             RTS            ;  and go home
                 ;
                 ; * Get a single hex digit *
                 ;
FE18 2000FE  HFE18  JSR  HFE00     ; Go get a char
FE1B C952           CMP  #'R       ; Reset ?
FE1D F016           BEQ  HFE35     ; Yes, exit
FE1F C930           CMP  #'0       ; Decimal digit ?
FE21 30F5           BMI  HFE18     ; Too low, try again
FE23 C93A           CMP  #'9+1
FE25 300B           BMI  HFE32     ; Yes, use it
FE27 C941           CMP  #'A       ; A - F ?
FE29 30ED           BMI  HFE18     ; No, try again
FE2B C947           CMP  #'F+1     ; Too High ?
FE2D 10E9           BPL  HFE18     ; Yes,try again
FE2F 18             CLC            ; Adjust A-F
FE30 E906           SBC  #6
FE32 290F    HFE32  AND  #$0F      ; Strip hi bits
FE34 60             RTS            ; Go home
                 ;
                 ; * MAIN ENTRY POINT *
                 ;
FE35 A903    HFE35  LDA  #$03      ; Init serial port
FE37 8D00FC         STA  SERPRT    ; Reset it
FE3A A9B1           LDA  #$B1      ; Recv Interrupt On
                                   ; Xmit Interrupt On
                                   ; 8 Data Bits
                                   ; 2 Stop Bits
                                   ; No Parity
                                   ; Clock divide=16
FE3C 8D00FC         STA  SERPRT    ; Set these
FE3F D8             CLD            ; Clr decimal mode
FE40 78      HFE40  SEI            ; Enable interrupts
FE41 A226           LDX  #$26      ; Set stack pointer
FE43 9A             TXS
FE44 A90D           LDA  #$0D      ; Print a Car Ret
FE46 200BFE         JSR  HFE0B
FE49 A90A           LDA  #$0A      ;  and a Line Feed
FE4B 200BFE         JSR  HFE0B
FE4E 2000FE         JSR  HFE00     ; Get an input char
FE51 C94C           CMP  #'L       ; Load Memory ?
FE53 F022           BEQ  HFE77     ; Yes, skip
FE55 C950           CMP  #'P       ; Print Memory ?
FE57 F034           BEQ  HFE8D     ; Yes, skip
FE59 C947           CMP  #'G       ; Go to program ?
FE5B D0D8           BNE  HFE35     ; None of the above
                 ;
                 ; * Go to User Program *
                 ;
FE5D AE2D01         LDX  H012D     ; Load stack ptr
FE60 9A             TXS
FE61 AE2A01         LDX  H012A     ; Load X & Y
FE64 AC2901         LDY  H0129
FE67 AD2E01         LDA  H012E     ; Load return addr
FE6A 48             PHA            ;  low
FE6B AD2F01         LDA  H012F     ;  and
FE6E 48             PHA            ;  high
FE6F AD2C01         LDA  H012C     ; Load status reg
FE72 48             PHA
FE73 AD2B01         LDA  H012B     ; Load A
FE76 40             RTI            ; Use an RTI to
```

Continued

```
                                    ;  invoke the above
                ;
                ; * Load Memory *
                ;
FE77 20C7FE  HFE77  JSR  HFEC7      ; Get an addr
FE7A A203           LDX  #$03       ; Set index for $FF
FE7C A000           LDY  #$00       ; Clear mem index
FE7E 20B5FE  HFE7E  JSR  HFEB5      ; Get a hex byte
FE81 A5FF           LDA  H00FF      ;  it's stored here
FE83 91FC           STA  (H00FC),Y  ; Save it
FE85 C8             INY             ; Incr index
FE86 D0F6           BNE  HFE7E      ; Not end of page
FE88 E6FD           INC  H00FD      ; Else, incr addr hi
FE8A B8             CLV             ;  and loop forever
FE8B 50F1           BVC  HFE7E      ; Exit is done with
                                    ;  the 'R' command
                ;
                ; * Print Memory *
                ;
FE8D 20C7FE  HFE8D  JSR  HFEC7      ; Get a hex addr
FE90 A000           LDY  #0         ; Clear mem index
FE92 A209    HFE92  LDX  #$09       ; Prime for 8 cols
FE94 A90D           LDA  #$0D       ; CR/LF
FE96 200BFE         JSR  HFE0B
FE99 A90A           LDA  #$0A
FE9B 200BFE         JSR  HFE0B
FE9E CA      HFE9E  DEX             ; Decr column count
FE9F F00B           BEQ  HFEAC      ; Done 8 columns ?
FEA1 20E0FE         JSR  HFEE0      ; No, print 1 byte
FEA4 C8             INY             ; Incr mem index
FEA5 D0F7           BNE  HFE9E      ; Loop till page done
FEA7 E6FD           INC  H00FD      ; Else, incr page num
FEA9 4C9EFE         JMP  HFE9E      ;  and loop
                ;
FEAC AD00FC  HFEAC  LDA  SERPRT     ; Done with line
FEAF 4A             LSR  A          ; Test serial input
FEB0 B08E           BCS  HFE40      ; If anything, quit
FEB2 EA             NOP             ; *JUNK*
FEB3 90DD           BCC  HFE92      ; Else, Loop forever
                ;
                ; * Get a hex byte at $FC + X *
                ;
FEB5 2018FE  HFEB5  JSR  HFE18      ; Get a hex digit
FEB8 0A             ASL  A          ; Shift to high
FEB9 0A             ASL  A          ;  nybble
FEBA 0A             ASL  A
FEBB 0A             ASL  A
FEBC 95FC           STA  H00FC,X    ; Save it
FEBE 2018FE         JSR  HFE18      ; Get another dig
FEC1 18             CLC             ; Combine the two
FEC2 75FC           ADC  H00FC,X
FEC4 95FC           STA  H00FC,X    ; Save the sum
FEC6 60             RTS             ; Then go home
                ;
                ; * Get a hex addr at $FC & $FD *
                ;
FEC7 A201    HFEC7  LDX  #$01       ; Set index for $FD
FEC9 20B5FE         JSR  HFEB5      ; Go get a byte
FECC CA             DEX             ; Decr index
FECD 20B5FE         JSR  HFEB5      ; Get a 2nd byte
FED0 60             RTS             ;  and go home
                ;
                ; * Print a hex digit *
                ;
FED1 18      HFED1  CLC             ; Adjust to ASCII
FED2 6930           ADC  #'0
FED4 C93A           CMP  #'9+1      ; Is it A to F ?
FED6 B004           BCS  HFEDC      ; Yes, skip
FED8 200BFE  HFED8  JSR  HFE0B      ; Print the char
FEDB 60             RTS             ;  and go home
FEDC 6906    HFEDC  ADC  #$06       ; If A to F, add 7
FEDE 90F8           BCC  HFED8      ;  and print it
                ;
                ; * Print a hex byte & a space *
                ;
FEE0 B1FC    HFEE0  LDA  (H00FC),Y  ; Get a data byte
FEE2 29F0           AND  #$F0       ; Strip low bits
FEE4 4A             LSR  A          ; Shift down
FEE5 4A             LSR  A
FEE6 4A             LSR  A
FEE7 4A             LSR  A
FEE8 20D1FE         JSR  HFED1      ; Print it
FEEB B1FC           LDA  (H00FC),Y  ; Regain data
FEED 290F           AND  #$0F       ; Strip high bits
FEEF 20D1FE         JSR  HFED1      ; Print low digit
FEF2 A920           LDA  #$20       ; Get a space
FEF4 200BFE         JSR  HFE0B      ; Print it
FEF7 60             RTS             ;  and go home
                ;
FEF8 40             .BYTE $40,$9D   ; *JUNK*
FEF9 9D
                ;
FEFA 3001    NMIVCT .WORD $0130     ; NMI Interrupt
FEFC 35FE    RESVCT .WORD $FE35     ; Reset Interrupt
FEFE C001    IRQVCT .WORD $01C0     ; IRQ Interrupt
                ;
                    .END BTPG6S
```

you can use spaces, commas, carriage returns, or anything else you might want to make your input more readable.

The print command takes the first 4 hex characters after the 'P' as a data address and immediately begins printing memory in rows of 8 bytes per line, separated by 1 space between each byte. At the end of each line it tests the serial input port. If any character has been received, it returns to the command loop.

The go command is more interesting. It requires no arguments because it takes everything it needs from 7 reserved locations on page 1. When a 'G' is received, X & Y are loaded from $129 & $12A, the stack pointer is loaded from $12D, an address is pushed onto the stack from $12E & $12F, a status byte is pushed onto the stack from $12C, and, finally, the A register is loaded from $12B. An 'RTI' instruction is then executed to load the processor status register and program counter from the data on the stack. That's it.

For an Assembly programmer on a serial system, this monitor provides a few useful subroutines. At $FE00 is a character input with echo routine. At $FE0B is a serial output routine. The routine at $FED1 prints the contents of the A register as a single hex digit. The routine at $FEE0 can be used to print data bytes as 2 ASCII characters, with the data pointed to by the address in $FC & $FD and indexed by Y.

Routines at $FE18, $FEB5 and $FEC7 could be used to get a hex digit, byte and address, respectively, with two cautions. First, in all of these routines the data is stored in a page zero location, so that has to be reserved. Secondly, if an 'R' is accidentally typed, control will immediately be passed to the ROM monitor with no return address stored.

★ ★ ★

BEGINNER'S CORNER

By: L. Z. Jankowski
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New Zealand

EDIT!

A well written program helps the user. Blank screens and inadequate instructions are not helpful and the wise programmer avoids the happenstance of both. A good program will respond helpfully when the desperate user types 'HELP'. Hitting the wrong key should not stop the program nor destroy data! The 'Edit' block, see Listing 1, of the Otaio Mailing List (OML - see June '84 issue) illustrates these ideas. It is here that Records can be examined at leisure, edited or deleted. The OML loads all the Records of a file into array D$(Q,C), so a simple FOR...NEXT loop is all that is required to rapidly access the data. Scrolling forwards or backwards through a File is as fast as accessing a Record at random.

Looking at Listing 1. In line 880, if Z=0 then return to Main Menu - there are no Records to edit! The user is protected from being confronted by a blank screen. Variable 'Z' keeps count of the number of Records in the File. Variable 'Q' in line 890 holds the number of the Record about to be displayed. Deleted Records have 'ZZ' as the first two characters of the first field and are not displayed.

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```
870 REM EDIT A FILE
880 R=0: IF Z=0 THEN 190
890 FOR Q=1 TO Z: IF LEFT$(D$(Q,1),2)="ZZ" THEN 1120
900 IF R THEN 1000
910 REM
920 PRINT !(28): FOR Y=1 TO 7: PRINT : NEXT Y: GOSUB 1220: Y=18
930 PRINT TAB( Y+3)"EDIT MENU": PRINT TAB( Y+3)"---------"
940 PRINT TAB( 8)"Change:-"
950 FOR C=1 TO P: PRINT TAB( Y)STR$(C)"> "N$(C): NEXT C: PRINT TAB( 8)"or,": Y=Y+1
960 PRINT TAB( Y)"6> Next Record": PRINT TAB( Y)"7> Previous Record"
970 PRINT TAB( Y)"8> Erase Record": PRINT TAB( Y)"9> Random Select"
980 PRINT TAB( Y)"-> EXIT": PRINT : GOTO 1010
990 REM
1000 DISK !"GO 467F": GOSUB 1220
1010 PRINT "Choice ? ";: GOSUB 310: PRINT C$;: IF Y$="-" THEN 190
1020 IF Y=0 THEN 880
1030 IF Y>5 THEN R=-1: Y=Y-5: ON YGOTO 1120,1140,1090,1180
1040 REM
1050 PRINT "Change ";: PRINT "$ "N$(Y)" to ";: INPUT Y$
1060 IF Y$="" OR Y$=H$ THEN 920
1070 D$(Q,Y)=Y$: GOTO 920
1080 REM
1090 PRINT "Erase ?  ";: GOSUB 310: PRINT C$;
1100 IF A=121 THEN D$(Q,1)="ZZ"+D$(Q,1): GOTO 1120
1110 Q=Q-1
1120 NEXT Q: GOTO 890
1130 REM
1140 Q=Q-1: IF Q=0 THEN Q=Z
1150 IF LEFT$(D$(Q,1),2)="ZZ" THEN 1140
1160 GOTO 1000
1170 REM
1180 INPUT "$ Record # = ";Q: IF Q<1 OR Q>Z THEN PRINT !(28): GOTO 1180
1190 GOTO 920
1200 REM
1210 REM Write a Record to Screen
1220 X=53568: Y$="RECORD "+STR$(Q)+" of"+STR$(Z): GOSUB 1250: X=X+S
1230 FOR C=1 TO P: Y$=D$(Q,C): GOSUB 1240: NEXT C: RETURN
1240 IF Y$="" THEN Y$=" "
1250 M=LEN(Y$): FOR R=1 TO M: POKE X+R,ASC(MID$(Y$,R,1)): NEXT R: X=X+S: RETURN
1260 REM
```

What does line 900 mean? It is merely shorthand for 'IF R<>0 then 1000' and logically means: 'If R is not false (i.e. true) then GOTO line 1000'. The jump in line 1000 is to the partial screen clear. DOS 3.2 users change line 1000 to:

```
1000 DISK!"GO 3D7F" :GOSUB
     1220 :REM 15743
```

ROM BASIC users will have to make line 1000 an 'X=USR(X)' call.

'X=USR(X)' is a BASIC command which 'tells' the BASIC Interpreter that it must run a machine code program whose starting address is to be found at addresses 11 and 12, (ROM BASIC only). On completion, control is returned to the BASIC program. To set the thing up do the following: take the starting address of the machine code program and split it into two. Address $0222 would fall into two parts, $02 and $22, which is 2 and 34 in decimal. Line 1000 now becomes:

```
1000 POKE 11,34 :POKE 12,2
     :X=USR(X) :GOSUB 1220.
```

Line 1010 demonstrates a simple way of preventing a screen scroll after a PRINT message - merely append 'CHR$(13);' to the PRINT line. Unfortunately, this does not work with INPUT - the <RETURN> key must be pressed, thereby forcing the screen to scroll. But one-character Input is still possible via the halting get-key sub-routine in line 310.

In line 1030, if 'Y' is greater than 5, then subtract 5 from 'Y', to get '1', '2', '3' or '4'. The 'ON Y GOTO' that follows will now force the correct jump - Aha! If 'Y' was less than 5 then the program continues to line 1050 where the chosen Record-field is offered for editing.

The next three blocks (lines 1090-1190) reveal why a Record is found so quickly. The variable 'Q' from the FOR...NEXT loop in line 890 is directly manipulated. Wobbling Wombats! This is a programming crime of the highest order - into the Outer Darkness ye programmer! Why risk the wrath of the High Priests in this way? Well, it works in a very efficient, uncomplicated manner....

A limitation of OSI BASIC is a lack of the ability to write a message starting at a specific screen address. This has been corrected in OS 3.3 with the command 'PRINT&' (means Print At). Failing that, the classic OSI method can be used as shown in line 1250. The method is practical because OSI BASIC is so fast!

Line 1060 offers a good example of how data can be protected from user error or forgetfulness. A good program should have no blind-alleys in which the user is at a loss as to what to do next.

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WAZZAT CORNER!

by: L. Z. Jankowski
Otaio Rd. 1 Timaru
New Zealand

OSI BASIC offers one set of commands. The Disk Operating System (DOS) offers another. The way to access the DOS commands from BASIC is through the word 'DISK!'. 'DISK!' can be used both in programs and in Immediate mode.

One puzzling DOS command is 'MEM'. What use is it? Think of MEM as a file which observes the rule First In First Out (FIFO). The file can reside anywhere in free computer memory (RAM). Using 'MEM', several commands can be stored together, thereby forming a Command File. For example, after disk boot-up a command file is placed at $2E25, it is 'RUN"BEXEC*.

The command, 'DISK!"MEM 9000, 9000"', tells DOS that the command file is to begin at memory location $9000 (36864 in decimal). Now, in line 40 of Listing 1, 'PRINT#5,' writes the required data to the command file. Next, in line 50, Input to BASIC is switched from the keyboard to the command file with 'DISK!"IO 10,02"'. BASIC now takes its orders from Memory, device 5. The first order is 'EXIT', followed by 'GO 7ØØØ', 'RE BA', and 'RUN 7Ø'. All these commands appear on the screen as they are executed. The command in line 7Ø hands Input and Output back to keyboard and screen. Notice that the '1Ø' and the 'Ø2' in '"IO 1Ø,Ø2"' and in '"IO Ø2,Ø2"', are read by DOS as HEX numbers; i.e. as base 16 numbers, NOT base 1Ø.

LISTING 1

```
1Ø PRINT!(28) :REM COMMAND FILE DEMO PROGRAM
2Ø C$=CHR$(13) :N$="9ØØØ" :N=9*4Ø96 :P$="7ØØØ" :P=7*4Ø96
3Ø GOSUB 11Ø :DISK!"MEM "+N$+","+N$
4Ø PRINT#5,"EXIT" +C$ +"GO " +P$ +C$ +"RE BA" +C$ +"RUN 7Ø"
5Ø DISK!"IO 1Ø,Ø2" :END
6Ø :
7Ø DISK!"IO Ø2,Ø2"
8Ø PRINT:INPUT"THE VALUE OF X IS ";X :PRINT "DONE, X= "X :END
9Ø :
1ØØ REM POKE machine code program
11Ø FOR X=P TO X+18 :READ N :POKE X,N :NEXT
12Ø DATA 72,138,72,162,6Ø,169,24Ø,157,Ø,211,2Ø2,224,Ø,2Ø8,246
13Ø DATA 1Ø4,17Ø,1Ø4,96 :RETURN
```

The command file can be placed anywhere in free RAM, including screen memory. Make these changes in line 2Ø, N$="D1ØØ" and N=9*4Ø96+1*256. The command file will now be seen in screen memory beginning at $D1ØØ. Notice that commands are separated by CHR$(13).

To summarize, 'MEM' is shorthand for 'Memory, device 5'. Device 5 can be thought of as a FIFO file from which BASIC or DOS can take Input or from which Output can be sent to screen or to some other device. Device 5 Input and Output can be placed anywhere in free RAM memory.

The ideas expressed in Listing 1 can be extended to include disk operations. Write a BASIC program that creates another BASIC program, saves it to disk, then loads itself back into RAM! All will be revealed next time!

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K P S BUSINESS SYSTEMS

By: Russell D. Daugherty
P. O. Box 719
Parkersburg, WV 26101

The Editor of PEEK [65] has been pleading for several months for his business customers to submit a manuscript of their work for use in his RAG. I use this term in a most respectful way since the magazine has been the most helpful publication we have encountered during the development of our business system. In return, for what it may be worth, we are going to try to make a contribution, as payment in kind.

In 1979 Kramers Photo Supply, Inc. had grown to five stores and became overwhelmed with detail. It was obvious that we had to stop growth, hire more non productive people, or automate. The first two options were unacceptable. We began an investigation of computers for automation. After one year and 15 pages of specifications we went to the market. Guess what? No response, except IBM and a $200,000 package, which was the same as no response. Just because we wanted an information system similar to GM, didn't mean we were GM. On our own, not knowing what we were doing, we made a cursory examination of hardware and software available through six area dealers. What we found would track how many widgets we had and their value but very little else. We were determined that data would be entered only once and significant details would have to be available. Not being very smart, we decided to do the job ourselves.

In 1980 we purchased an OSI C2-OEM, Okidata 125 Printer and a Soroc IQ 120 Terminal as a learning tool to develop software. We didn't know anything about computers, operating systems or language. We selected OSI strictly due to proximity to a dealer and factory. Our first lesson was that the dealer was an amateur, the second was that the factory would not support dealers or customers, and the third was portability. We were stunned to learn that our programs would not run on any other computer. Not willing to admit a $7,000 mistake or being conned, we went after the factory to get their attention. The struggle turned into an asset, one of their former programmers became a great teacher but not at OSI expense. All we ever insisted upon was correction of errors and omissions which they took care of, finally. It appears that ISOTRON is making giant strides in correcting this image but we suspect more old OSI'ers will have to depart before the problem is totally solved.

In 1983, after personally spending 3.5 years on the project, we engaged a young man with a Computer Science education and over 3 years experience with the big boys. He polished our major programs and taught me enough to polish the rest. He has since implemented the balance of the system outline. He is also responsible for the sophisticated refinements mentioned in the technical section.

We just recently arranged for a service technician to come aboard to round out our staff for startup. He is very familiar with computers, particularly OSI. Now we can design, sell and service.

We spent a great deal of money, more hours than I will admit, gained too much weight, changed glasses twice and made a computer widow out of my wife, but we now have a fine business system. It is so good that we formed a company to market the system bundled with OSI (Isotron) hardware. K P S Business Systems, a division of Kramers Photo Supply, Inc. has now started to market a complete system to the hardgoods retail, wholesale and particularly photo industries. No one has ever accused me of being modest.

The decision to stay with 65U was due to its simplicity and execution speed. Our Point of Sale program was rewritten for TurboDos, but it operated so slowly that we couldn't stand it. So, we discarded the idea of compatibilty and portability in favor of efficiency. Hard nosed business people should not be influenced by buzz words.

The software was written in modular form but is so tightly tied together that it can't be used as modules without extensive rework. This may turn into a liability but we think that business people are more efficiency conscious than the average bear. Unfortunately, they are also more conservative and this may cause a marketing problem.

Our system starts at the Point of Sale where most of the data entry takes place. As you know, on a cash register, the operator enters quantity * price, with total and tax calculated, but there is no verification of either. We enter the same data (except *) with description; unit price, and extension are automatic. The operator can verify the entry and the price best not be changed, unless it is indeed wrong, because it will have to be explained. To start a transaction, the operator selects cash or charge, enters ID letter and continues with transaction. Fourteen (14) items fills the screen before scrolling starts. Cursor controls are provided to correct input errors and scroll the screen up or down after it is filled. Total sale plus tax is updated and displayed after each entry. While entry speed is slightly slower than a register, substantial time is saved overall since the data flows through to the Balance Sheet.

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Charge accounts are carried in all stores but managing these remotely was always a problem. Salesmen and managers found it difficult to say no to a sale, when the account was shaky. Now, credit limits are established and when a sale exceeds these limits the manager must personally approve. If the account is 90 days past due, the program will not permit a charge. The manager can now blame the computer. More next month.

★

LINE EDITOR FOR 65D 3.2 BASIC

By: Earl Morris
3200 Washington
Midland, MI 48640

A simple line editor for OSI ROM BASIC appeared in MICRO 38:72. The same editor modified for DISK BASIC was published in the 'Micro on the OSI' book. Both versions of this editor required listing the line to be edited, then jumping to the editor program. Text could be changed (altered) but the insert and delete functions were omitted and left to the reader. After using this editor for several years, I finally decided to add the missing functions.

The first decision is how to hook into BASIC. Several articles have appeared hooking into the 'LET' function but at a cost in execution time. The original version of the disk editor replaced the little used WAIT command with EDIT. However, it becomes very difficult to edit programs containing the WAIT command, and such programs will not run. The present editor hooks into the WAIT command, but jumps to the editor only if WAIT occurs in the immediate mode. If WAIT appears in a program, it functions normally. To call the editor the command used is 'WAIT 100' to modify line 100.

The disk version of the editor in "Micro on the OSI" does not allow the edited program to be RUN without saving and rebooting the system. This is caused by the polled keyboard routine (designed for ROM BASIC) using locations $0213-$0216. These locations are free in ROM BASIC, but nicely clobber the RUN vector for DISK BASIC. The Software Consultants disassembly manual documents this bug but I had to rediscover it while writing this editor. The key in routine at $252B saves and restores the conflicting bytes with every keystroke.

The LIST routine is not a subroutine but jumps back to the BASIC input, a line mode. A patch is put into LIST to allow listing a line and jumping back to the editor. Then the patch is removed to restore normal operation of LIST. The line to be modified is printed on the screen and if necessary shifted up the screen to always appear at the same position. The block cursor then appears over the first character of the line. If the line is not found a jump is made back to BASIC.

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LINE EDITOR FOR 65D 3.2 BASIC

by: Earl Morris

```
  10                           ; LINE EDIT FOR OSI 540 BOARDS
  20                           ; 65D 3.2 DISK VERSION
  30                           ;
  40                           ; ASSUME INSTALLATION IN TOP OF 48K
  50                           ; POKE 133,190 RESERVES MEMORY
  60                           ; POKE 5789,0 : POKE 5790,191 HOOKS INTO WAIT
  70                           ;
  80 BF00                      *=$BF00
  90 001B=                     BUFF=$001B      ;BASIC INPUT BUFFER
 100 BF00 48                   PHA
 110 BF01 A587                 LDA $87         ;CHECK POINTER
 120 BF03 C9FF                 CMP #$FF        ;IMMEDIATE MODE ?
 130 BF05 F004                 BEQ EDIT        ;IF YES GO TO EDIT
 140 BF07 68                   PLA
 150 BF08 4C6616               JMP $1666       ;GO TO NORMAL WAIT
 160 BF0B 68       EDIT        PLA             ;BEGIN EDITOR
 170 BF0C A920                 LDA #$20        ;BLANK
 180 BF0E A289                 LDX #$89
 190 BF10 9DBFD6   CLR         STA $D6BF,X     ;CLEAR SCREEN BOTTOM
 200 BF13 CA                   DEX
 210 BF14 D0FA                 BNE CLR
 220 BF16 A9BF                 LDA #CONT/256   ;CALCULATE ADDR HI
 230 BF18 8DA921               STA $21A9       ;MODIFY LIST TO JMP TO CONT
 240 BF1B A926                 LDA #CONT*256/256
 250 BF1D 8DA821               STA $21A8
 260 BF20 20C600               JSR $00C6       ;GET LINE NUMBER FROM BASIC
 270 BF23 4CB906               JMP $06B9       ;DO LIST OF BASIC LINE
 280 BF26 A974     CONT        LDA #$74        ;RESTORE LIST COMMAND
 290 BF28 8DA821               STA $21A8
 300 BF2B A904                 LDA #$04
 310 BF2D 8DA921               STA $21A9
 320 BF30 20730A               JSR $0A73       ;OUTPUT LF
 330 BF33 20730A               JSR $0A73       ;OUTPUT LF
 340 BF36 AD01D6               LDA $D601       ;CHECK ALIGNMENT OF LISTED LINE
 350 BF39 C920                 CMP #$20        ;IS SPOT BLANK ?
 360 BF3B D017                 BNE NOLF        ;NO, SKIP NEXT LF
 370 BF3D 20730A               JSR $0A73       ;ANOTHER LF
 380 BF40 AD01D6               LDA $D601       ;CHECK ALIGNMENT OF LISTED LINE
 390 BF43 C920                 CMP #$20        ;IS SPOT BLANK ?
 400 BF45 D00D                 BNE NOLF        ;NO, SKIP NEXT LF
 410 BF47 20730A               JSR $0A73       ;ANOTHER LF
 420 BF4A AD01D6               LDA $D601       ;CHECK IF LINE FOUND
 430 BF4D C920                 CMP #$20
 440 BF4F D003                 BNE NOLF        ;BRANCH IF FOUND
 450 BF51 4CDABF               JMP QUIT        ;LINE NOT FOUND
 460 BF54 A200     NOLF        LDX #$00        ;CHARACTER COUNTER
 470                   ;
 480                   ; START EDITING LISTED LINE
 490                   ;
 500 BF56 BD01D6   CUR         LDA $D601,X     ;GET CHAR UNDER CURSOR
 510 BF59 8DEEBF               STA CURSAV      ;SAVE IT
 520 BF5C A9A1                 LDA #$A1        ;CURSOR SYMBOL
 530 BF5E 9D01D6               STA $D601,X     ;PLACE CURSOR
 540 BF61 8EEFBF               STX XSAV
 550 BF64 202B25               JSR $252B       ;GET KEY STROKE DOS ROUTINE
 560 BF67 AD6323               LDA $2363       ;PICK UP CHARACTER
 570 BF6A AEEFBF               LDX XSAV
 580 BF6D 48                   PHA
 590 BF6E ADEEBF               LDA CURSAV      ;GET SAVE CHAR
 600 BF71 9D01D6               STA $D601,X     ;RESTORE SCREEN
 610 BF74 68                   PLA
 620 BF75 C940                 CMP #'@         ; @ TO COPY OLD LINE
 630 BF77 F016                 BEQ COPY
 640 BF79 C90D                 CMP #$0D        ;CHECK FOR RETURN
 650 BF7B F05F                 BEQ DONE
 660 BF7D C95F                 CMP #$5F        ;CHECK FOR BACKSPACE
 670 BF7F F01E                 BEQ BACK
 680 BF81 C904                 CMP #$04        ;CNTRL D
 690 BF83 F03E                 BEQ DELETE
 700 BF85 C909                 CMP #$09        ;CNTRL I
 710 BF87 F021                 BEQ INSERT
 720 BF89 C911                 CMP #$11        ;CNTRL Q
 730 BF8B F04D                 BEQ QUIT
 740 BF8D D003                 BNE WSCR        ;MUST BE CORRECTION
 750 BF8F BD01D6   COPY        LDA $D601,X     ;READ SCREEN
 760 BF92 E048     WSCR        CPX #72         ;LIMIT LINE LENGTH
 770 BF94 F006                 BEQ L3
 780 BF96 9DC1D6               STA $D6C1,X     ;WRITE SCREEN
 790 BF99 951B                 STA BUFF,X      ;INPUT BUFFER
 800 BF9B E8       L1          INX
 810 BF9C 4C56BF   L3          JMP CUR
 820 BF9F A920     BACK        LDA #$20        ;BLANK
 830 BFA1 CA                   DEX             ;BACK-UP ONE
 840 BFA2 9DC1D6               STA $D6C1,X     ;CLEAR COPY ON BACKSPACE
 850 BFA5 30F4                 BMI L1          ;LIMIT BACK SPACE
 860 BFA7 4C56BF               JMP CUR
 870 BFAA 8EEFBF   INSERT      STX XSAV        ;INSERT SPACE ROUTINE
 880 BFAD A047                 LDY #71         ;START AT END
 890 BFAF B900D6   L2          LDA $D600,Y     ;MOVE LINE RIGHT
 900 BFB2 9901D6               STA $D601,Y
 910 BFB5 88                   DEY
 920 BFB6 CCEFBF               CPY XSAV        ;DONE ?
 930 BFB9 D0F4                 BNE L2
 940 BFBB A920                 LDA #$20        ;BLANK
 950 BFBD 9D01D6               STA $D601,X     ;BLANK TO CURSOR POSITION
 960 BFC0 4C56BF               JMP CUR
 970 BFC3 8A       DELETE      TXA             ;DELETE A CHARACTER
 980 BFC4 A8                   TAY             ;COUNTER TO Y
 990 BFC5 B902D6   L4          LDA $D602,Y     ;MOVE LINE LEFT
1000 BFC8 9901D6               STA $D601,Y
1010 BFCB C8                   INY
1020 BFCC C048                 CPY #72         ;CHECK FOR DONE
```

Listing continued on page 16

The '@' key is used to copy the correct part of the old text. One character is copied for each key press. If you don't like my selection of copy key, this is set in line 620 of the assembler code. Control I will insert space into the line to insert new text. Control D will delete a character from the old text. Control Q aborts the modifications and leaves the editor making no changes. Backspace moves the cursor to the left erasing text in the new line as it goes. Any other character will replace the character under the cursor. The RETURN key stores the new text into the BASIC program. Note that the cursor must be moved all the way to the end of the text you want. What appears in the new text at the bottom of the screen is what is sent to BASIC.

The following assembler source assumes you will install the editor at the top of a 48K system. You must poke BASIC with the address of the edit routine:

POKE 5789, Lo Addr

POKE 5790, Hi Addr

A POKE 133,190 also reserves space at the top of BASIC for the editor program. If you type in the source code to the assembler and assemble it to $BF00, it will overwrite the assembler symbol table. This can be avoided by changing $2300 from $BF to $BD before loading the assembler.

★

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8=C8P
O=C2/3OEM
D=C2/3-D
2=C200,C3A/B
3=C300

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C=Cassette
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SAN JOSE, CA 95124
Seller:
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MAINTAINS A CATEGORIZED RECORD OF AND COMPUTES TAX DEDUCTIBLE DEPRECIATION COSTS FOR PROFESSIONAL BOOKS AS WELL AS CATEGORIZED RECORD OF NON-PROFESSIONAL BOOKS. MDMS COMPATIBLE. SUPPORTS EPSON PRINTER WITH GRAFTRAX PLUS. IF PURCHASED WITH TAX RECORD PROGRAM, BOTH ON DISK FOR $16.

CHECKWRITER
3.3/4/51/S/P/A/5/ $25
Author:
RUDY POLACEK
248 PURISIMA
WOODSIDE, CA 94062
Seller:
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USER-DEFINED ONE LETTER CODE, AND AMOUNT TO PRINT A COMPLETE CHECK. ALLOWS FOR INPUT OF CHECKS THAT ARE WRITTEN AWAY FROM THE HOME. USES NEBS CHECK FORMS AND HAS YOUR CODE LETTERS AND BALANCE ALWAYS VISIBLE ON THE SCREEN. ACCUMULATES YEAR TO DATE TOTAL FOR TAXES AND BUDGET.

INCOME TAX RECORDS
3.2/8/81/S/M/A/1/ $10
Author:
R. S. BALDASSANO
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SAN JOSE, CA 95124
Seller:
SAME

MAINTAINS TAX INCOME AND DEDUCTIONS IN MDMS COMPATIBLE FILES BY CATEGORY WITH EXPLANATIONS. CATEGORIES ARE SUB-TOTALED AND TOTALS FOR INCOME AND DEDUCTIONS ARE COMPUTED. NOT TAX YEAR DEPENDENT! PRINTS CATEGORY CODES OR FILES ON COMMAND, TO EPSON GRAFTRAX PLUS PRINTER.

REAL CASH FLOW ANALYSIS
/1/51/S/O/M// $199
Author:
JERRY TRAVIS
8533 PACIFIC HWY SE
OLYMPIA, WA 98503
Seller:
COMPUTER SHELTER
8533 PACIFIC HWY SE
OLYMPIA, WA 98503

CASH FLOW ANALYSIS IS A LAND DEVELOPMENT PROGRAM FOR REAL ESTATE. IT PRODUCES A FOUR PAGE REPORT SUITABLE FOR PRESENTATION TO YOUR BANKER. DISBURSEMENT AND INCOME ARE ITEMIZED FOR PURCHASE AND DEVELOPMENT OF A TRACT OF LAND AND SUBSEQUENT SALE OF INDIVIDUAL LOTS. (AVAIL NOV 1)

RECORD TRANSFER
D3.3/4/52/S/O/A/1/ $60
Author:
MARC J. OUIMET
174 STE. CATHERINE
LA PRAIRIE, QC, CANADA J5R-1P5
Seller:
SAME

SELECTIVE TRANSFER OF RECORDS FROM ONE MASTER FILE TO OTHER. ALLOWS 3 CONDITIONS ON RECORD SELECTION & ALSO ALLOWS TRANSFER OF ONLY THE DESIRED FIELDS SPECIFIED BY THE USER. EXCELLENT FOR UPDATNG FILES & CRUNCHING A LARGE FILE. DOCUMENTATION INCLUDE LISTING, VARIABLE TABLE & INSTRUCTION SHEETS.

TAX AID PACKAGE II
3.3/8/81/S/M/A/1/ $30
Author:
R. S. BALDASSANO
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SAN JOSE, CA 95124
Seller:
SAME

1984 VERSION OF TAX PREPARATION AND DEPRECIATION PROGRAMS SEEN IN PEEK(65). TAX TABLES NOW IN FILES, SO FORECASTING WITH DIFFERENT YEAR TAX TABLES IS POSSIBLE. PROGRAM INCLUDED TO CREATE, READ, AND EDIT TAX TABLES. AVAILABLE APPROX JAN 85, WITH ADDITIONAL FEATURES TO BE ANNOUNCED.

TURF MANAGEMENT
3.0/4/51/S/P/A/6/ $150
Author:
J. BENTON JONES
P. O. BOX 5455
ATHENS, GA 30604
Seller:
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TURF GRASS SPECIES, DESCRIBING THEIR GROWTH CHARACTERISTICS, CULTURAL REQUIREMENTS.& METHOD FOR ESTABLISHMENT, LIME & FERTILIZER NEEDS, & WEED CONTROL. SERVES AS AN INFO SOURCE ON TURF, & GUIDE FOR THE AMATEUR & PROFESSIONAL TURF MANAGER. MENU DRIVEN PROGRAM.

<> <> <> <> <> <> <> <> <> <>
OS65-D*GAME*VIDEO
<> <> <> <> <> <> <> <> <> <>

WARTS
ROM/1/C/S/N/A/1/ $10
Author:
RICHARD LIST
2104 VILLAGE DR.
PITTSBURGH, PA 15221
Seller:
SAME

MOVE TOAD ACROSS ROAD WITHOUT GETTING HIT BY A CAR, TO AN ISLAND WITHOUT GETTING EATEN BY SNAKE, THEN HOP ON LOGS AND TURTLES ACROSS RIVER WITHOUT FALLING IN WATER & DROWNING. HOP INTO EMPTY HOME. CARS AND RIVER MOVE FASTER FOR EACH OF 5 TOADS. ALL MACHINE LANGUAGE.

BETA/65 PROGRAMMING SYSTEM
3.1/4/51/S/P/D/1/ $120
Author:
MICROGRAM SYSTEMS
P. O. BOX 252
LA HONDA, CA 94020
Seller:
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BETA/65 IS A PRGRMING SYS FOR CTRL PROCESSING APPLICATIONS WITH THE 6502 MICROPROCESSOR. IDEAL FOR PRECISION INTEGER APPLICATIONS WHERE HIGH SPEED & INTERACTIVE USER ENTRY ARE DESIRED. USE FOR ROBOTICS, TELECOMMUNICATIONS & REAL-TIME MEASUREMENT & CONTROL IN LAB OR INDUSTRIAL ENVIRONMENTS.

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L. SEDIVY/M. MARLOWE
5307 MILL RUN DR.
MARIETTA, GA 30067

Seller:
LOU SEDIVY
5237 FOREST BROOK PKWY
MARIETTA, GA 30067

ENHANCED/MODIFIED WORD PROCESSOR PROGRAM FOR C8P BASED ON PEEK 12-83. '83 TAX PREPARATION-TRY LAST YEARS & MAYBE BALDASSANO WILL MODIFY FOR '84 PEEK 4-84. SIMPLE DBMS W/MODIFICATION & EXCELLENT SORT ROUTINE. MENU PROGRAM BY AUTHOR WILL AUTOMATICALLY ADD NEW PROGRAMS TO MENU.

QC XBAR R CHARTS
3.2/1/51/S/P/A/1/ $75
Author:
GARY MOORE
50 KEOKUK RD., C-12
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PROGRAM SHOWS DEVIATION OF LOT SAMPLE GROUPS RELATIVE TO SPECIFIED & CALCULATED VALUES -- HANDLES UP TO 16 SAMPLES PER LOT AND UP TO 50 LOTS -- FULL MENU DRIVEN-- 1 DISK BUFFER -- CHARTS ARE PLOTTED ON PRINTER USING ASCII CHARACTERS -- RUNS UNDER OS65D 3.2, 3.3 C4P BASIC W/PRINTER-32 K WORKSPACE-CALL.

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OS65-D*OTHER*VIDEO
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BASIC WORD PROCESSOR
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Author:
WILLIS H. COOK
1298 RENEE DR.
LILBURN, GA 30247
Seller:
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WITH 32K RAM IT WILL HANDLE FILES OF ABOUT 3 1/3 TYPED PAGES, USEFUL FOR ADDRESS LABELS, LETTERS OR SHORT REPORTS. LINE ORIENTED. (YOU CAN'T OUT-TYPE IT.) COMMANDS: TYPE, DELETE, FIND LINE NO., REPLACE, INSERT LINE, CHANGE, VIEW, SAVE, LOAD, AND PRINT. 65DV3.3. LISTING & DOC. $8.00.

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WILLIS H. COOK
1298 RENEE DR.
LILBURN, GA 30247
Seller:
SAME

3 PROGRAMS, NAME & ADDRESS SECRETARY: HOLDS 48 ENTRIES, OUTPUT FORMATTED FOR LABELS. APPOINTMENT CALENDAR: HOLDS 95 APPOINTMENTS, BIRTHDAYS, ETC. IF IT REMINDS YOU OF YOUR ANNIVERSARY ONCE, IT IS WORTH THE PRICE! ADDING MACHINE: GREAT FOR CKBOOK BAL. 65DV3.3 LISTING & DOC $8.00.

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3.3/4/81/S/O/A/1/ $15
Author:
WILLIS H. COOK
1298 RENEE DR.
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Seller:
SAME

IT WON'T TELL YOU WHICH STOCKS TO BUY, BUT IT WILL CALCULATE HOW WELL YOURS ARE DOING IN ADDITION TO INDIVIDUAL STOCK AND TOTAL PORTFOLIO VALUES, IT DETERMINES THE ANNUAL RATE OF APPRECIATION FOR EACH ONE AND YEAR-END SALES RECORDS. 65DV3.3 LISTING & DOC. ONLY $8.00.

TWELVE PROGRAMS
1.0/1/C1/S/N/M/1/ $29
Author:
JERRY E. TRAVIS
8533 PACIFIC HWY SE
OLYMPIA, WA 98503
Seller:
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OLYMPIA, WA 98503

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WALLPAPER ESTIMATOR
3.2/8/81/S/P/A/1/ $8
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Seller:
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OS65-D*UTILITY*SERIAL & VIDEO
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JOAN TIRINO
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3.2/1/51/S/P/A/1/ $8
Author:
MIKE PUTNAM
2234 NANCY PLACE
ROSEVILLE, MN 55113
Seller:
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HEXDOS*UTILITY*SERIAL & VIDEO
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CORRECTED GARBAGE COLLECTOR
ROM/1///O/M/3/ $20
Author:
SOFTWARE SOLUTIONS
2401 53RD AVE., SW
SEATTLE, WA 98116
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Seller:
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ENHANCED MONITOR EPROM
ROM/1///O/M/2/ $20
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MONITOR EPROM FOR THE SERIES 2 C1P/SB. HEXDOS COMPATIBLE. CORRECTED KEYBOARD ROUTINE, ONE KEY OUTPUT CONTROL, SCREEN EDITOR, BASIC SHORTHAND, TERMINAL EMULATOR WITH UP/DOWN LOAD & PROTOCOL CONTROL, 65V COMPATIBLE MACHINE CODE DUMP, SCREEN PRINT, & ONE KEY JUMP TO MACHINE CODE.

ENHANCED ROM BASIC
ROM/1///O/M/2/ $40
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TWO EPROMS TO REPLACE BASIC1/4 IN THE SERIES 2 C1P/SB. ENHANCED VIDEO DRIVER WITH ONE KEY CONTROL OF 24/48 FORMAT, ONE KEY SCREEN CLEAR, & TRUE BACKSPACE. CORRECTED ERROR CODES & MODIFIED INPUT ROUTINE TO ALLOW ALL 96 PRINTABLE ASCII CHARACTERS. REQUIRES BOARD MODIFICATIONS.

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OS65-U*BUSINESS*SERIAL & VIDEO
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INFORMATION REGISTRY SYSTEM
1.4+/O/81/M/D/D/1/ $1000
Author:
SOFTOUCH, INC.
2 EAGLE DRIVE
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Seller:
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1.4+/O/81/M/D/D/1/ $1000
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OS65-U*BUSINESS*SERIAL
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ALPHA PROPERTY MANAGEMENT
1.2+/D/71/MH/D/D// $7500
Author:
FRANK LACY
5302 LAKE WASH BLVD NE,STE 234
KIRKLAND, WA 98033
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1.43/2/21/HR/M/A/1/ $ASK
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COMPUTER & SOFTWARE ANALYSTS
121 PRESCOTT E. HYW
PRESCOTT, AZ 86301
Seller:
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1.2/8/81/SH/D/A/2/ $45
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ROBERT H. FOLTZ
1911 MULFORD AVE.
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1.44/O/81/MH/D/D/1/ $400
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MOBILE EQUIPMENT DATA BASE SYSTEM. TRACKS EQUIPMENT WHICH IS MOVED OFTEN, SUCH AS RENTAL TOOLS. PROVIDES REPORTS BY LOCATION, PART NUMBER, COST, DESCRIPTION, ETC.

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Author:
JOHN HUNTLEY
3223 BROSS RD.
HASTINGS, MI 49058
Seller:
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HASTINGS, MI 49058

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RATHGERBER & ASSOCIATES
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KPS BUSINESS SYSTEMS
P. O. BOX 719
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1.42/D/71/MH/P/D/1/ $650
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GARY GESMUNDO
2117 FAWN
MIDDLEVILLE, MI 49333
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TO BE CONTINUED!

If your software didn't appear, watch for it next month!

★

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* OS-65u IS A TRADEMARK OF OHIO SCIENTIFIC, INC.

MODIFY WP65Ø2

By: L. Z. Jankowski
Otaio Rd 1, Timaru
New Zealand

Version 1.2 of WP65Ø2 is an excellent word processor, but there are features which one may want to remove or modify. Page-numbering may not be required, or the Device number needs to be changed. These parameters, and others, are stored in RAM from $Ø222 to $Ø246 - see Table.

One way to make the changes is to load WP65Ø2 as usual, enter the Monitor and modify the contents of $Ø222 to $Ø246 as required. For example, keying in --> .Ø23C/ØØ, will remove page-numbering. Now --> .ØØØØG will return to WP-65Ø2's Menu. (Contents of ØØØØ should be ØØ - software-Interrupt trap). If page-numbering is still there, read on!

To modify WP65Ø2 a Table of parameters is required, similar to the one presented here. Also, the track numbers on which WP65Ø2 is stored must be known. Try running DIR to determine the track numbers. They could be 12, 13 and 14. To help determine both, make a backup copy of the WP65Ø2 disk and carry out the following procedure. The Extended Monitor is required.

Load the Extended Monitor from disk and EXIT to the kernel. Swap disks in Drive to the backup copy of WP65Ø2. Key-in -->CA 5ØØØ=12,1, and then --> RE EM. Examine RAM with --> Q5ØØØ. If track 12 is the start of WP65Ø2 code then you should see hex as shown in the Table, from $5ØØ5. If it's not exactly the same, look for a similar pattern of hex numbers. If nothing makes sense, repeat the procedure with other tracks. When the right track has been found the following two will, hopefully, contain the rest of WP65Ø2. With the first track of WP65Ø2 in RAM at $5ØØØ use the Extended Monitor to make the required changes. Then EXIT to the kernel and save back to disk with --> SA 12,1=5ØØØ/B, if track 12 was the starting-track.

Alternatively, use BASIC. Make a note of the RAM locations where changes are to be made.

Having determined the starting track, use the BASIC program listed here. Lines 9Ø and 13Ø could be deleted. Make sure the right starting-track number is in line 8Ø. N1 in line 4Ø should also be that starting-track number. Line 1ØØ could be inserted to make the required changes. For example:

```
100 POKE 20511,0  :  REM Poke $501F with 0 to remove page-numbering.
```

```
10 REM CHANGE WP6502 - LZJ
20 L=PEEK(132): H=PEEK(133)
30 PRINT !(28): POKE 132,255: POKE 133,79: REM TOP OF MEM IS NOW $4FFF
40 INPUT "Save WP6502 to 3 TRACKS starting with TRACK # ";N1
50 N2=N1+1: N3=N2+1: N1$=STR$(N1): N2$=STR$(N2): N3$=STR$(N3)
60 :
70 GOSUB 160
80 DISK !"CA 5000=12,1"
90 DISK !"CA 6000=13,1": DISK !"CA 7000=14,1"
100 :
110 GOSUB 200
120 DISK !"SA "+N1$+",1=5000/B"
130 DISK !"SA "+N2$+",1=6000/B": DISK !"SA "+N3$+",1=7000/B"
140 POKE 132,L: POKE 133,H: CLEAR : PRINT FRE(X): END
150 :
160 PRINT : PRINT : INPUT "Insert MASTER Disk.  Ready ";A$
170 IF LEFT$(A$,1)="Y" THEN RETURN
180 GOTO 160
190 :
200 PRINT : PRINT : INPUT "Insert DESTINATION Disk.  Ready ";A$
210 IF LEFT$(A$,1)="Y" THEN RETURN
220 GOTO 200
```

```
SOME VALUES IN RAM FOR WP6502 V1.2
--------------------------------------------------------------------

0222 4C1740     jump $4017   this is part of XOT at $317E
0225 52         R  for REPLACE ?
0226 04         device
0227 01
0228 20         lowest allowable char
0229 80         highest char
022A 40         end of file char
022B 7D         line feed char
022C 7C         end of block
022D 5C         start of block = \
022E 5D         delete/move insert char = ]
022F 5E         used in line edit control
0230 5E         up-arrow char for delete/move = ^
0231 7F         rubout key for deletions
0232 23          pound sign  #
0233 5E
0234 0A         page margin to printer
0235 42         lines per printer page
0236 3C         width per printer page
0237 05
0238 0A
0239 0A         view screen margin
023A 18         lines scrolled in view
023B 3C         view/edit screen width
023C 01         page number
023D 01         number of copies
023E 00
023F 2D         - char in WP6502 message
0240 05
0241 02         linefeeds for menu etc
0242 0A
0243 5B         left bracket [
0244 5D         right bracket ]
0245 00
0246 9F
```

-WP6502 V1.2 appears to load from $317E to $5278, and moves to $0222 to $231C.
-Entry is at $026B.
-Text starts at $317E. Previous 4 bytes give start and end of text ie. 7E 31 LL HH 00.
-WELCOME at 40D3.

LISTING CONTINUED FROM PAGE 10

```
BFCE D0F5               BNE L4
BFD0 A920               LDA #$20        ;BLANK
BFD2 A047               LDY #71
BFD4 9901D6             STA $D601,Y     ;BLANK AT END OF LINE
BFD7 4C56BF             JMP CUR
BFDA A200      QUIT     LDX #$00        ;ABORT ALL CHANGES
BFDC A900      DONE     LDA #$00
BFDE 951B               STA BUFF,X      ;NULL INTO BUFFER
BFE0 A992               LDA #$92        ;ADDR OF "OK"
BFE2 A003               LDY #$03
BFE4 200300             JSR $0003       ;DISPLAY "OK" MESSAGE
BFE7 A21A               LDX #$1A        ;BUFFER ADDRESS
BFE9 A000               LDY #$00
BFEB 4C8004             JMP $0480       ;BACK TO BASIC INSERT A LINE
BFEE 20        CURSAV   .BYTE $20
BFEF 00        XSAV     .BYTE $00
```

THE END ★

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LETTERS

ED:

In the June issue there was a letter from Carl M. King of Sarasota, FL asking about the WP6502 Word Processor. He wanted to change the page numbering default value from 01 to 00.

The version that I have was purchased in 1980, Copyright 1979, Rev. C5. It is for OS-65D-5" disk. The program WP-6502 on the disk includes an ASSEMBLY language program on top of the BASIC program. When the BASIC program is loaded, the ASSEMBLY language program is also loaded and starts at memory location $327E (12926) in my system.

Following a jump statement there is a list of some 40 constants. A partial list follows:

```
12944 $0A Margin
12945 $42 Lines/page
12946 $3C Text width
12947 $05 Paragraph indent
12948 $0A Line feed
12949 $00 Screen margin
12950 $18 Lines/screen
12951 $3C Screen width
12952 $01 Page number
12953 $01 Copy number
12954 $00 ??
```

A listing of the BASIC program WP6502 should confirm these locations through the Screen width. This BASIC program allows "changes to the WP6502 Codes".

By typing DISK!"LO WP6502 and PRINT PEEK the locations 12951, 12952, 12953, and 12954 it will confirm that the values are as shown. Then by typing a POKE 12952,00 the Page number default will be changed. A DISK!"PU WP6502 will put it on the disk. It worked for me.

For some time now, I have been working on a disassembly of the WP6502 and would like to hear from anyone that is doing the same thing.

J. Edward Loeffler, Jr.
1441 Greenbriar Rd.
Elkins Lake Box 278
Huntsville, TX 77340

Edward:

When you have completed the disassembly of WP6502, I hope you will share it with PEEK.

Peek Staff

* * * * *

ED:

I recently ran a wanted ad in PEEK(65). Let me say that all of the PEEK(65) readers who responded were friendly, helpful, and fair. I had decided to keep and upgrade my SBII because it will do what I want (some math plus WP for letters), and because I believe that even a theoretical physicist (myself) can fix it should the need arise. I have had the machine for 4 years and have used it for physics and radio teletype decoding (amateur radio Baudot to ASCII) with the Aardvark program.

If legal (is it?), I will send anyone who desires a copy of the Aardvark-RTTY program for a SASE and/or copy the program onto tape if a blank tape with $1.00 for postage is sent to me.

Below is a simple matrix multiplication program I have written and used for the times when I want numbers instead of symbols.

```
1. REM N BY N ARRAY WITH C=AB
2. REM ONLY SQUARE MATRICES
3. REM N=2 IS A 3 BY 3 ARRAY
5. INPUT N
10. FOR I=0 TO N
11. FOR J=0 TO N
20. PRINT "A"I;J, "B" I;J
30. INPUT A(I,J), B(I,J)
31. REM ASKS FOR THE A AND B
    MATRIX ELEMENTS
45. NEXT I
46. NEXT J
60. END
48. FOR F=0 TO N
49. FOR G=0 TO N
50. FOR M=0 TO N
52. C(F,G)=C(F,G)+A(F,M)*B
    (M,G)
53. REM MATRIX MULTIPLICATION
54. NEXT M
56. PRINT "C" F;G, C(F,G)
57. NEXT G
58. NEXT F
```

For N>10 a dimension (DIM) statement must be added.

I very much enjoyed R. L. Trethewey's article in the July issue but that SBII cold start has PEEK(65532) and PEEK(65533) yielding 0 and 255 respectively, while it is more accurate to say that the 6502 can address 65,535 memory locations (rather than is).

Does anyone have a copy of the Aardvark tape program CURSOR? How does one address individual pixels with the SBII (for making Greek characters)?

Thanks for an excellent users publication.

Paul Harris
Morristown, NJ 07960

Paul:

We think you had better check with Aardvark before disseminating their program.

Peek Staff

* * * * *

ED:

I have a comment to make about the OSI polled keyboard routine published in the June 1984 issue of PEEK(65), and also a very likely explanation of the problem Steve Rydgig is having with his C4P locking up (July 1984, page 22).

Since OSI was trying to squeeze the routine into one page, they disregarded the possibility that a key closure in column 0 could occur (no keys other than SHIFT LOCK and ACTION KEY on joystick #1 exist there). Noise, however, can be picked up in the keyboard cable appearing as a key in column 0. The keyboard routine will then get stuck at $FD32 (GETVAL subroutine) looking for a column forever.

I have a C8P-DF with detached keyboard and it would lock up occasionally ever since I bought the machine in 1980. The condition got much worse when I extended the keyboard cable by 6 ft. I knew that the computer could be locked up by depressing the ACTION KEY on joystick #1 when a keyboard input is expected, and suspected that in both cases the reason is the same.

Since Steve's problem appeared only recently, I would suspect a hardware problem. Most likely a bad keyboard cable connection or IC's U2 on 542 board or U3H on 540 board. Both IC's are 8T26 transceivers. The IC designations are from C4P Sam's Photo-Facts Manual. I would also recommend replacing the 7404 (U8) on 542 board with a Schmidt trigger 7414 or 74LS14.

The routine correction is simple and is shown as line 52A to be inserted between drives 52 and 53 with the listing in the June 84 issue, page 2:

```
52A     BEQ     CLEAR
```

Implementing it, however, is not that easy. If anybody could find two spare bytes in the bootstrap ROM, getting a new ROM would be the easiest solution. In my case, I have assembled the corrected routine at $BF00 (I still use

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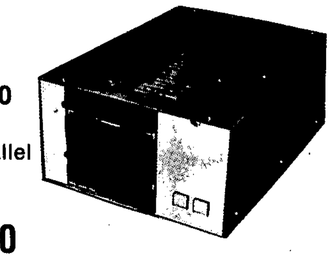

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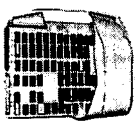

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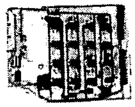

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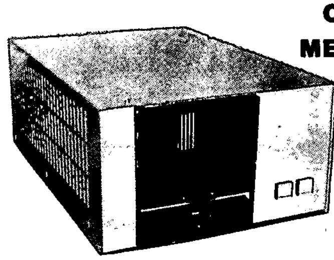

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some of the ROM subroutines and the key value table) and patched OS65D 3.2. The routine is loaded from disk to the memory by BEXEC*. In correcting the routine, I have also eliminated the use of page 2 locations and the need for swapping these four bytes by OS65D.

This change eliminated all my lock up problems with OS65D compatible software, which consists mostly of games.

For more serious work, I am using DOS/65 version 1.2 since 1982 and am very happy with it. I am especially impressed by the powerful yet simple editor and its capability of handling files larger than the available memory. I was glad to finally see a review of DOS/65 in your magazine.

Talking about keyboard routines, the best I have seen is the UCSD PASCAL SBIOS routine which I have installed in my DOS/65 SIM. It is almost two pages long. The keyboard is decoded as close to a standard keyboard as possible, and with SHIFT and RPT key combinations, it will generate all printable ASCII characters. Key debouncing is excellent, so it works fine even in a noisy environment like mine.

I am almost never completely satisfied with any purchased software and DOS/65 was no exception, mainly for its awkward loading procedure. There is an obvious solution to this problem by placing SIM on track Ø and then let SIM load CCM and PEM. The BOOT is then only 25 bytes long. I have made this change to my DOS/65 despite objections from Richard Leary (the author of DOS/65), that CCM, PEM and SIM locations on disk do not conform to a standard DOS/65 system. Since DOS/65 is unique for OSI anyway, I see only convenience and no drawbacks. Data track compatibility is not affected and files may be transferred between disks with either system tracks configuration.

I have actually eliminated the need for BOOT program altogether on my system by modifying the Machine Monitor ROM instruction at $FFED from JMP $22ØØ to JMP($FD). This allows SIM to be loaded directly where it belongs (or any user program located on track Ø can be loaded anywhere in the memory).

I hope this information will also help other people whose polled system is locking up like Steve Rydgig's.

Jan Synek
Chicago, IL 6Ø651

* * * * *

ED:

I have enjoyed using and modifying the word processor written by Stanley Harshfield in the December 1983 PEEK. As the number of lines of text gets over about 1ØØ, the program begins to show pauses of several seconds at random times. This is due to memory becoming filled and triggering the garbage collection. And of course, the more strings in your text, the more often the garbage collection takes place and the longer it takes. I have made several changes to reduce this problem. The vector array T$(15Ø) is not necessary. This becomes a second copy of the text. Delete the DIM T$(15Ø) in line 193Ø and replace all occurrences of T$(X) with a simple variable like W$. T$(X) is used only in the PRINT section.

Concatenation of strings A$= A$+ F$(V) is a major creator of string garbage. Avoiding concatenation where possible will reduce calls to the garbage collector. For example in line 115Ø the F$(V)array is concatenated into PR$ and then printed. Instead, you can directly print the substrings using a semicolon PRINT F$(V);

It would be interesting to hear from anyone who has modified this program.

Earl Morris
Midland, MI 4864Ø

* * * * *

ED:

I have been using (and accumulating) OSI computers for about six years and have acquired quite a bit of software on 5 1/4" disks. I recently bought a pair of Shugart 8" drives and would like to transfer some programs (Planner Plus and OSI WP3.1) from 5 1/4 to 8". Has anyone done this, and if so how many software changes are necessary? Also, my local OSI dealer doesn't have 65D3.3 on 8". Where can I get it?

I have been looking for a way to read IBM 374Ø format data disks. There is a service that supplies weekly updates for electrical contractors inventory and prices this way. I bought a C3-OEM thinking that the 51Ø multiprocessor and CP/M would enable me to do this but I soon learned that CP/M isn't all that I thought it was and that disk formatting is what will determine whether CP/M will run from one machine to the next. Can anyone supply me with the track header format that 65U uses?

I recently modified my 54Ø color board to deliver TTL RGB signals to a Sanyo 7.5Mhz RGB monitor. In retrospect it wasn't that hard to do, but I really don't think the results are that great. If anyone is interested, I'll send them the details.

I recently bought a Novation J-Cat modem and experienced some of the same problems that other readers had written about. After considerable searching I discovered that I needed to have my 5Ø5 board (or whatever serial port) wired for 12ØØ baud and that the software (the modem program on OSI 65D3.3 and also Aurora's Intelligent Terminal program) somehow sets it back down to 3ØØ baud. I don't think I've ever seen that mentioned anywhere before.

I currently am working out a bug in a calendar/notebook program and will send it to you in return for all the help I've gotten from reading PEEK(65) over the years. Thanks again.

Craig Borst
3762 14Øth Ave.
Holland, MI 49423

* * * * *

Craig:

Hope this answers all your questions!

1. There is no practical way for a user to convert either WP-3 or Planner-Plus from 5-1/4 to 8". Both packages are dependent on the precursor to OS-65D V3.3 and the operating system on both disks is modified. An ambitious user might be able to disassemble the two packages and make the necessary changes, but in terms of dollars, I don't think it's worth it, and I haven't even mentioned the hardware problems. Better to bite the bullet and buy the 8" versions. If your dealer does not have them, he should. You can always call OSI, but try your dealer again first.

2. D&N makes a board that will read/write IBM 374Ø disks as

well as OSI format.

3. The key to switching to 1200 baud is the ACIA initialization. Somewhere in both programs, the code will POKE 64512 first with 3 and then with a second value (usually 2). Subtract 1 from the second value and insert it into the program. Of course, Term-32 makes the task a whole lot more painless.

Our thanks to Rick Trethewey, SYSOP for the OSI SIG on CompuServe for helping to answer your question. He is also the author of Term-32.

Peek Staff

* * * * *

ED:

The Extended Input feature of OS65U release 1.3 and above permits the specification of data type as part of the INPUT command syntax. If the data type is integer, floating point or cash, Extended Input permits a sign ("+" or "-") to be the first character of the input string so that signed numbers may be entered.

I have several applications in which I do not want to permit signed numbers to be entered (e.g., telephone numbers and ZIP codes). The solution, of course, was to test the first character of the data entered for the presence of a sign and reject the entry if a sign was entered. I have discovered that Extended Input uses memory locations 6331 and 6332 to store the ASCII values of the plus ("+") and minus ("-") signs, and if the contents of these locations are changed to zero (POKE 6331,0 and POKE 6332,0), Extended Input will not accept signed numbers. Making these changes has permitted me to remove the editing for signs from my programs.

Recently, I stumbled across a method for establishing a "data filter" using the Editor or Extended Input features of OS65U (release 1.3 and above) when reading data from disk files. This may be of interest to some OSI users.

When either Editor or Extended Input is active, memory locations 23709 and 23710 are used to specify the range of characters which will be accepted with an INPUT command. Location 23709 is the lower bound and normally contains a value of 32, ASCII code for a blank (or space). Location 23710 is the upper bound and contains a value of one more than the ASCII code of the greatest character which can be entered. Normally, the upper bound value is 128, one more than the ASCII code for the DELete character. By altering the lower and upper bounds, the programmer may choose the range of characters he/she wishes to accept in data entry routines. (Note: the boundaries are not automatically reset by the system, and you should restore them to their normal values as appropriate.)

If the boundaries are changed and data is entered through the terminal (CRT), Editor and Extended Input will not permit characters to be entered which fall outside of the boundaries. The CRT alarm is sounded each time an attempt is made to enter an "illegal" character. When data is being read from disk, characters which fall outside the boundaries are "thrown away" or "filtered out" by the input routine and not included in the target field of the INPUT command. For example, assume there is an alphanumeric field in each record of a disk file from which only upper case alphabetic characters are to be extracted. One such field contains the data "S1A2M3P4-L5E6". The program code could be:

```
10 POKE 23709, ASC("A") : REM
   set lower bound
20 POKE 23710, ASC("Z") + 1 :
   REM set upper bound
30 INPUT A$ : REM read data
   field
40 POKE 23709, 32 : POKE
   23710, 128 : REM reset
   boundaries
```

When the data field is read, A$ will contain "SAMPLE". Of course, line 30 could be coded using Extended Input syntax. If the boundaries are set to accept only integers, the target of the INPUT may be either a numeric or a string variable. If this is of interest to anyone, I would encourage him/her to experiment with the method, especially with Extended Input formats to determine just what it is possible to do.

The Column One article in the August 1984 issue of PEEK(65) contained a salient point which caught my eye. In discussing two articles appearing in the issue, the author makes the statement, "... to open new and unlimited doors to complete utilization

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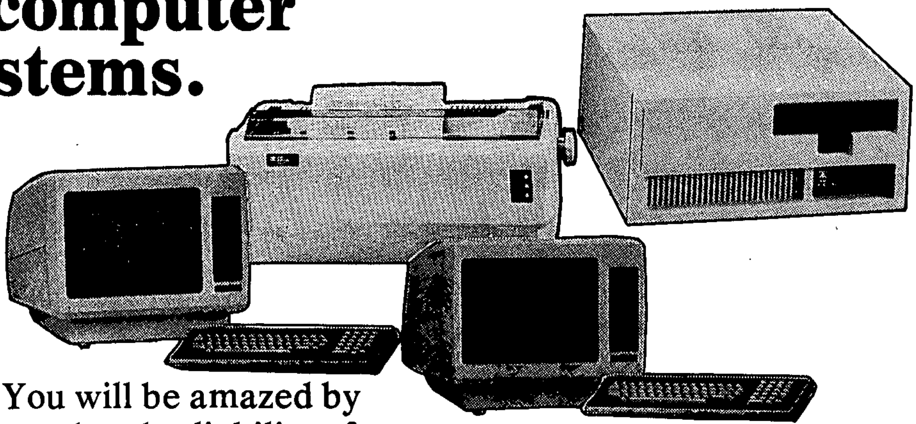

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of OSI machines." This is certainly true of the information I have garnered from PEEK(65). I have applied many of the things I have learned from articles and letters and they have resulted in better programs than would otherwise have been possible. Perhaps the PEEK staff, a reader or someone from ISOTRON could help open a door for me, and, I suspect, others who are using the Extended Input feature.

When an Extended Input command is issued, the following events take place before data can be entered:

1. Blanks are written on the CRT screen to clear any residual data that may be there (the number of blanks written is the same as the maximum number of characters permitted in the reply).

2. The cursor is backspaced to the beginning of the reply field on the CRT.

3. The contents of the mask field, if any, are displayed.

4. The cursor is backspaced to the beginning of the reply area on the CRT.

For example, assume string A$ contains "ABCD". The command INPUT [2Ø,"A"]A$ will result in the four steps listed above to be performed (the maximum reply length is 2Ø characters and the mask field contents are "ABCD"). With these four steps there is noticeable cursor movement, even on my terminal which is operating at 96ØØ baud.

I would like to have the POKEs which would permit me to selectively suppress/permit:

1. Clearing of residual data from the screen.

2. Displaying the mask field.

These two options would be of great value to me as they would permit more "polished" programs to be written. My programs are written in such a manner that I know what is currently displayed on the screen. Therefore, I know if residual data needs to be cleared and/or if the mask field must be redisplayed.

Any assistance you can provide in getting a solution to this problem will be greatly appreciated.

David A. Weigle
Morton, IL 6155Ø

David:

Readers: If someone out there has disassembled this code, we would love to hear from you. In the meantime, we have not found anyone at ISOTRON who has it. Besides that, the ISOTRON policy (with some justification) has been not to encourage alteration of the operating system for fear that code written for the "old modified" will not work on the "future" versions.

Eddie

* * * * *

ED:

In the July Beginners Corner, you mentioned several ways to get the negative voltage required for an RS232 signal.

There is an easy way that overcomes the problems you discussed, and still does not require a battery. Radio Shack sells a voltage inverter IC #276-2335. You simply feed plus 5 volts in, and you get negative 5 volts out. It's that easy! It's a very valuable chip to know about.

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AD$

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