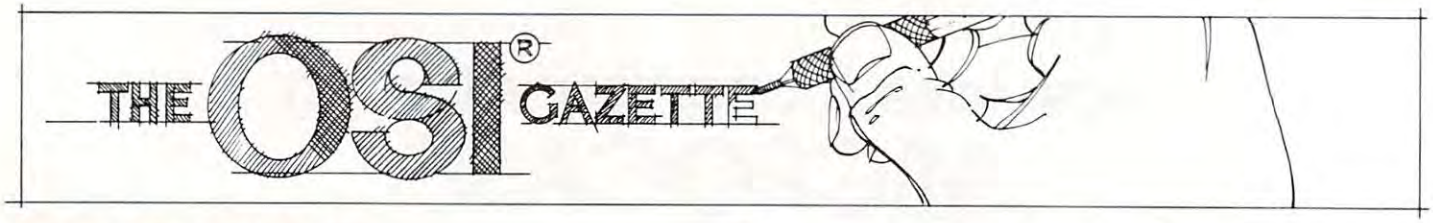

OSI C1P Control Functions

C. A. Stewart
Adrian, MI

In a previous issue of **COMPUTE!** a basic poke version of my control function was published. Since that time I have discovered a method to implement a RUN command with a single key stroke much like the PET run key.

The main routine resides in page 2 in this revision (I used page 0 in my previous version but the added functions required relocation) and the one key screen clear resides in page 0. Refer to figure #1 (Flow chart) for discussion of the program functions.

In normal operations locations #536 and #537 contain vectors set by system ROM to the input routine $FFBA in typical 6502 hi/lo order i.e. $BA in location #536 and $FF in location #537. (Note for new computerist the symbol $ in machine language signifies HEX number, not string and the symbol # signifies a decimal number). By changing the vectors in these locations we force the system into our routine first and then return control to the ROM, to implement in this example we poke #536 with #128 and #537 with #002 (POKE536,128:POKE537,2) in one command line! It should be noted that a break warm start will require this poke command line since a warm start re-initializes these vectors.

A useful basic program for HEX to DEC and DEC to HEX is included in listing #3 for readers without tables or a TI HEX calculator.

When the routine starts we go to the input subroutine $0280 which jumps to $FFBA (input a character) and compare to the following.

Control L	**Load command**
Control S	**Save command**
Control A	**Run Command**
Escape Key	**List command**
Rubout Key	**Screen Clear**

If any of the comparisons are true then the appropriate subroutine in ROM is called, otherwise normal program operation continues. I chose Control A for the Run function for two reasons. First the logical choice, Control r, is utilized for a remove in the cursor control package I have in ROM and because of its location next to the control key. The command keys can be changed to whatever the user requires by replacing the compare data with the appropriate key numbers. Control A = $01 and follows thru with control Z = #26. (see graphics manual.)

Listing #1 is the machine language routine. Listing #2 is the BASIC poke program. The machine language screen clear is callable in BASIC via the USR function. To use load and run, code erases itself, leaving the machine code in page 0 and 2, and doesn't require any normal usable memory.

```
D8            PHA
D9            LDA #$20;LOAD SPACE CHR
DB            LDX #$00;LOAD ACCX W/0
DD   HERE     STA $D000,X;STORE SPACE CH
R ON SCREEN
E0            STA $D100,X
E3            STA $D200,X
E6            STA $D300,X

E9            INX         ;INC X
EA            BNE HERE    ;BRANCH TO $DD I
F NOT EQUAL TO 0
EC            PLA
ED            RTS
```

```
280         JSR $FFBA;JUMP TO INPUT SUBRO
UTINE $FEED ON C4P
283         CMP #$0C ;COMPARE TO CONT L
285         BNE CONT S;BRANCH TO CONTROL
S
287         JSR $FF8B ;EXCUTE LOAD COMMAN
D
28A CONT S  CMP #$13  ;COMPARE TO CONTROL
 S
28C         BNE RUB   ;
28E         JSR $FF96 ;EXCUTE SAVE COMMAN
D
291 RUB     CMP #$7F  ;COMPARE TO RUBOUT
293         BNE ESC   ;
295         JMP $D8   ;EXCUTE SCREEN CLEA
R
298 ESC     CMP #$1B  ;COMPARE W/ESCAPE
29A         BNE RUN   ;
29C         JMP $A4B5 ;EXCUTE LIST
29F RUN     CMP #$01  ;COMPARE W/CONT A
```

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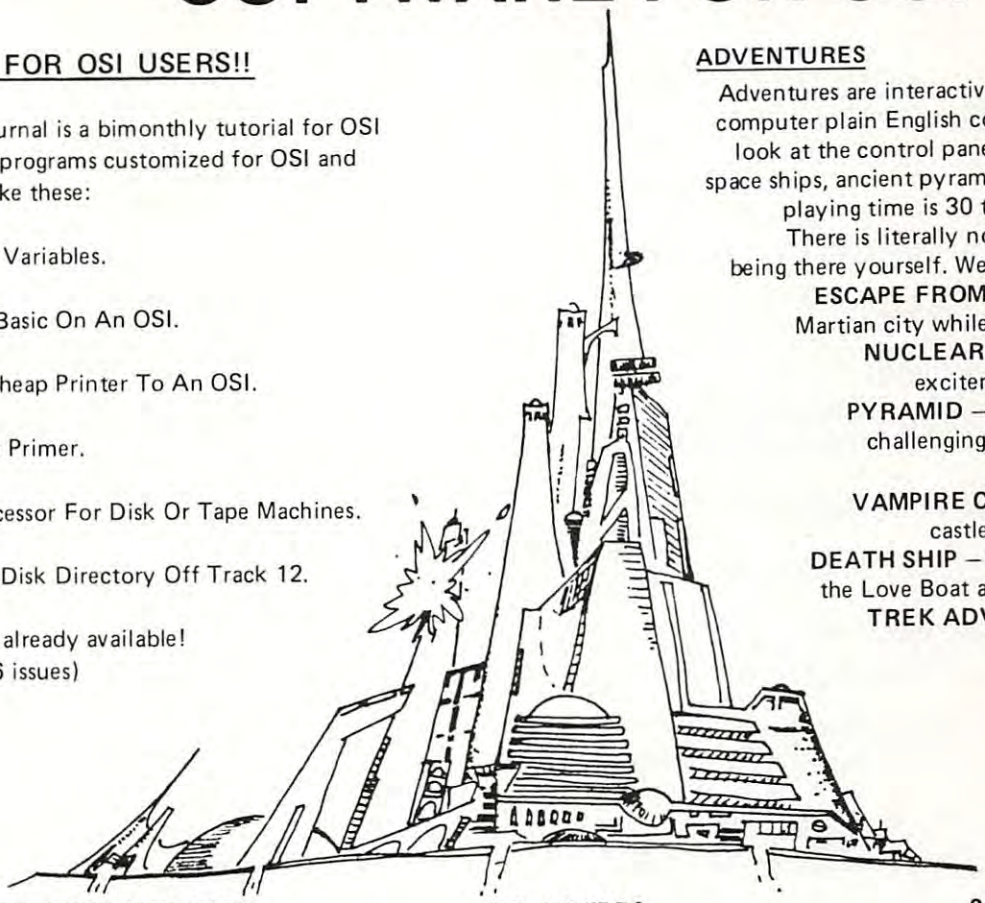

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```
2A1         BNE END    ;
2A3         JSR $A477 ;INITALIZE ROUTINE
2A6         JSR $A5C2 ;RUN ROUTINE
2A9 END     RTS        ;
```

Listing 1

```
 10 REM MACHINE LANG SUBROUTINE FOR OSI
C1P/C4P
 20 REM CHARLES A. STEWART
 30 REM 3033 MARVIN DR.
 40 REM ADRIAN, MICH 49221
 60 FORX=640TO681:READA:POKEX,A:NEXT
 65 REM FOR C4P LINE 70 CHANGE 186,255 T
O 237,254
 70 DATA32,186,255,201,12,208,3,32,139,2
55,201
 80 DATA19,208,3,32,150,255,201,127,208,
3,76
 90 DATA216,0,201,27,208,3,76,181,164
 100 DATA201,1,208,6,32,119,164,32,194,1
65,96
 110 FORX=216TO237:READA:POKEX,A:NEXT
 120 DATA72,169,32,162,0,157,0,208,157,0
,209,157,0,210
 130 DATA157,0,211,232,208,241,104,96
 150 POKE11,216:POKE12,0:POKE536,128:POK
E537,2
 160 PRINT"*CONTROL VERSION #1":PRINT"*B
Y CHARLES A. STEWART"
 165 PRINT:PRINT
 170 PRINT"ESC LISTS":PRINT"RUBOUT GIVES
 SCREEN CLEAR
 180 PRINT"CONTROL S =SAVE":PRINT"CONTRO
L L = LOAD
 185 PRINT"CONTROL A RUNS PROGRAM
 200 NEW
```

Listing 2

```
 10 REM CHARLES A. STEWART
 20 REM 3033 MARVIN DR.
 30 REM ADRIAN MI 49221
 40 REM 517-265-4798
 50 REM NOVEMBER 22, 1980
 60 REM DEC TO HEX AND HEX TO DEC CONVER
SON PROGRAM
 100 DIMA$(16),S$(16):FORX=1TO16:READA$(
X):READS$(X):NEXT
 110 DATA0000,0,0001,1,0010,2,0011,3,010
0,4,0101,5,0110,6
 120 DATA0111,7,1000,8,1001,9,1010,A,101
1,B,1100,C,1101,D,1110,E
 130 DATA1111,F
 135 S$="0123456789ABCDEF"
 140 POKE11,0:POKE12,253:X=0:Y=0:W=0:Q=0
:I=0:E$="0"
 150 FORX=0TO40:PRINT:NEXT:PRINT"A) DECI
MAL TO HEX":PRINT
 160 PRINT"B) HEX TO DECIMAL":PRINT:PRIN
```

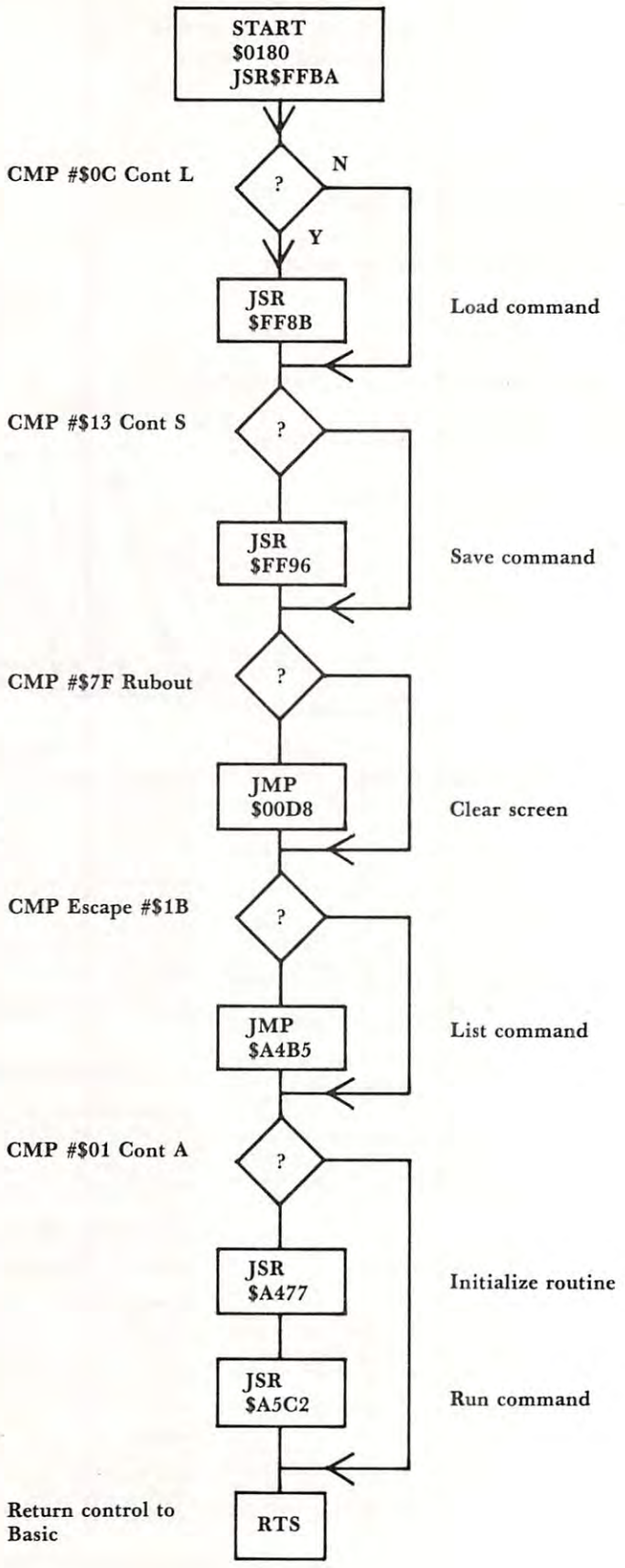

Figure #1

```
T"YOUR SELECTION":X=USR(X)
 170 IFPEEK(531)=65THENPRINT"DEC TO HEX
CONVERSION":GOTO3010
 180 IFPEEK(531)=66THENPRINT"HEX TO DEC
CONVERSION":GOTO2010
 190 GOTO150
 2010 PRINT:INPUT"HEX NUMBER";I$:IFLEN(I
$)>4THEN2010
 2020 IFLEN(I$)<>4THENI$=E$+I$:GOTO2020
 2040 FORX=1TO4:FORY=1TO16
 2050 IFMID$(I$,X,1)=MID$(S$,Y,1)THENB$(
X)=A$(Y)
 2060 NEXTY:NEXTX
 2070 B1$=B$(1)+B$(2)+B$(3)+B$(4)
 2080 PRINT:PRINTI$" IN BINARY=":PRINTB1
$
 2100 X=1:W=0:Q=LEN(B1$):I=0
 2120 Y$=MID$(B1$,Q,1):Y=VAL(Y$):I=Y*X:W
=W+I:X=X*2
 2130 Q=Q-1:IFQ<>0GOTO2120
 2140 PRINT:PRINTI$" IN DECIMAL=";W
 2150 PRINT:PRINT"TYPE ANY KEY TO CONTIN
UE":X=USR(X):GOTO2010
 3010 PRINT:INPUT"DECIMAL NUMBER";I$:I=V
AL(I$):Y$=" ":Y=65536
 3012 Y=Y/2
 3015 IFI>65535THENPRINT:PRINT"TOO LARGE
":GOTO2150
 3030 X=INT(I/Y):IFX=0THENY$=Y$+"0":GOTO
3050
 3040 Y$=Y$+"1":I=I-Y
 3050 Y=Y/2:IFINT(Y)=0THEN3200
 3060 GOTO3030
 3200 PRINT:PRINTI$"IN BINARY=":PRINTY$
 3210 X=2:Y=4
 3215 RE$=" "
 3220 A$=MID$(Y$,X,Y):FORW=1TO16:IFA$=A$
(W)THENRE$=RE$+S$(W):GOTO3240
 3230 NEXTW
 3240 X=X+4:IFX>14THENGOTO3260
 3250 GOTO3220
 3260 PRINT:PRINTI$" IN HEX=";RE$
 3265 PRINT"TYPE ANY KEY TO CONTINUE":X=
USR(X):GOTO3010
OK
```

Listing 3