

# ATARI 800 CHECKERS DISPLAY BY C. SHAW 3/31/80 ; Copyright 1980 Atari, Inc. and Carol Shaw#

## ATR image#

- [Checkers Source Code Atari Assembler-Editor with DOS 2.0S SD.atr](#) ; to be used with the [Atari Assembler Editor](#) cartridge by Kathleen Ann O'Brien
- [Checkers Source Code Atari Assembler-Editor with DOS 2.75 SD.atr](#) ; to be used with the [Atari Assembler Editor](#) cartridge by Kathleen Ann O'Brien

## TXT Files#

- [Checkers Source Code.txt](#) ; Checkers Display source code in a text file
- [Checkers assembliert-0 Fehler.txt](#) ; Checkers Display assembled with 0 errors in a text file

## Source Code#

```
10 .TITLE "ATARI 800 CHECKERS DISPLAY BY C. SHAW 3/31/80"
20 ;
30 ;COPYRIGHT ATARI 1980
40 ;
50 ;THIS IS AN EXAMPLE OF A DISPLAY LIST WHICH USES CHARACTER MAPPING TO
60 ;PRODUCE THE CHECKERS AND THE TOP AND BOTTOM BORDERS OF THE BOARD.
70 ;PLAYERS ARE USED FOR THE RED SQUARES. THIS GIVES 6 COLORS WITHOUT
80 ;CHANGING THE COLOR REGISTERS.
90 ;MISSILES ARE USED FOR THE LEFT AND RIGHT BORDERS.
0100 ;THE PROGRAM STARTS AT THE LOCATION SPECIFIED BY PMB.
0110 ;A FEW TRICKS ARE USED TO SAVE RAM, BUT FURTHER OPTIMIZATION IS POSSIBLE
0120 ;ROM CARTRIDGE.
0140 ;
0150 ;COLLEEN (ATARI 800) EQUATES
0160 ;
0170 CHBASE =    $D409
0180 DMACTL =    $D400
0190 SDMCTL =    $022F
0200 HPOSP0 =    $D000
0210 SIZEP0 =    $D008
0220 PCOLR0 =    $02C0
0230 SDLSTL =    $0230
0240 SDLSTH =    $0231
0250 GRACTL =    $D01D
0260 PMBASE =    $D407
0270 GPRIOR =    $026F
0280 VDSLST =    $0200
0290 NMIEN  =    $D40E
0300 ;
0310 ;DISPLAY LIST EQUATES
0320 ;
0330 INT      =    $80    ;DISPLAY LIST INTERRUPT (BIT 7 OF NMI STATUS)
0340 JMPWT   =    $41    ;JUMP AND WAIT UNTIL END OF NEXT VERTICAL BLANK (2 BYTES)
0350 RELOAD  =    $40    ;RELOAD MEM SCAN COUNTER (2 BYTES)
0360 VSC     =    $20    ;VERTICAL SCROLL ENABLE
0370 HSC     =    $10    ;HORIZONTAL SCROLL ENABLE
0380 JUMP    =    1      ;JUMP INSTRUCTION (2 BYTES)
0390 BLANK1  =    0      ;1 BLANK TV LINE
0400 BLANK2  =    $10    ;2 BLANK LINES
```

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0410 BLANK3 =      $20    ;3
0420 BLANK4 =      $30    ;4
0430 BLANK5 =      $40    ;5
0440 BLANK6 =      $50    ;6
0450 BLANK7 =      $60    ;7
0460 BLANK8 =      $70    ;8 BLANK TV LINES
0470 .PAGE
0480 ;
0490 INTOFF =      $20          ;USED TO GET INTERNAL CODE FOR UPPER CASE ALPHANUMERICS
0500 ;
0510 ;INTERNAL CHARACTER CODES
0520 ;
0530 SPI      =      ' -INTOFF
0540 AI       =      'A-INTOFF
0550 CI       =      'C-INTOFF
0560 DI       =      'D-INTOFF
0570 EI       =      'E-INTOFF
0580 GI       =      'G-INTOFF
0590 HI       =      'H-INTOFF
0600 II       =      'I-INTOFF
0610 OI       =      'O-INTOFF
0620 PI       =      'P-INTOFF
0630 RI       =      'R-INTOFF
0640 TI       =      'T-INTOFF
0650 YI       =      'Y-INTOFF
0660 N1I      =      '1-INTOFF
0670 N8I      =      '8-INTOFF
0680 N9I      =      '9-INTOFF
0690 N0I      =      '0-INTOFF
0700 ;
0710 ;CHECKERS EQUATES
0720 ;
0730 ;CODES FOR SPECIAL CHECKERS CHARACTER SET
0740 ;
0750 EMPTY    =      0          ;EMPTY SQUARE
0760 CHECKER=      1          ;ORDINARY CHECKER
0770 KING     =      2
0780 CURS     =      3          ;CURSOR (X)
0790 BORDER   =      4          ;USED FOR TOP AND BOTTOM BORDERS OF BOARD
0800 ;
0810 CLP0     =      0          ;PLAYER 0 (HUMAN)
0820 CLP1     =      $80          ;PLAYER 1 (COMPUTER)
0830 CLBOR    =      $C0          ;BORDER COLOR (USED TO SET UP 2 MSB'S OF CHAR)
0840 PMB      =      $5000      ;PLAYER MISSILE BASE ADDRESS & PROGRAM LOCATION
0850 .PAGE
0860 ;
0870 ; RAM VARIABLES
0880 ;
0890          *=      PMB
0900 BOARD    *=      *+32          ;CHECKER BOARD (ONLY 32 BLOCK SQUARES ARE USED)
0910 T0       *=      *+1          ;TEMP FOR MOVING BOARD TO MEM MAP
0920 ;
0930 ;PLAYER AND MISSILE GRAPHICS.
0940 ;PLAYERS ARE USED FOR SQUARES, MISSILES FOR LEFT AND RIGHT BORDERS.
0950 ;
0960          *=      PMB+$180
0970 GRM03    *=      *+$80          ;MISSILE GRAPHICS
0980 GRP0     *=      *+$80          ;PLAYER 0 GRAPHICS
0990 GRP1     *=      *+$80          ;PLAYER 1

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```

1000 GRP2   *=   *+$80   ;   2
1010 GRP3   *=   *+$80   ;   3
1020 ;
1030 TITL   *=   *+20     ;TOP LINE OF CHARS -- ATASCII MESSAGE
1040 TOPBRD *=   *+16     ;TOP BORDER OF BOARD
1050 BRDSP  *=   8*16+*   ;BOARD DISPLAY
1060 BOTBRD *=   *+16     ;BOTTOM BORDER
1070 .PAGE
1080 ;
1090 ;GP -- SPECIAL CHECKERS CHARACTER SET (ONLY CODES 0-4 ARE USED).
1100 ;
1110       *=   PMB+$600
1120 GR
1130       .BYTE 0,0,0,0,0,0,0,0 ; BLANK (0)
1140       .BYTE $3C,$7E,$FF,$FF,$FF,$FF,$7E,$3C ;CHECKER (1)
1150       .BYTE $3C,$7E,$A5,$A5,$C3,$C3,$7E,$3C ;KING (2)
1160       .BYTE $C3,$66,$3C,$18,$18,$3C,$66,$C3 ;CURSOR (3)
1170       .BYTE 0,$FF,$FF,$FF,$FF,$FF,$FF,0 ;BORDER (4)
1180 .PAGE
1190 ;
1200 ;
1210 ;DISPLAY LIST
1220 ;
1230 DSP
1240       .BYTE BLANK8 ;24 BLANK LINES
1250       .BYTE BLANK8
1260       .BYTE BLANK8
1270       .BYTE RELOAD+6 ;LINES 0-7 MESSAGE LINE: 20 ACROSS X 5 COLOR X 1 LINE RESOL
1280       .WORD TITL
1290       .BYTE INT+BLANK1 ;8. INTERRUPT TO CHANGE CHARACTER BASE ADDRESS AND CHANGE
1300       .BYTE 6         ;9-16. TOP BORDER: 16 X 5 X 1 CHARS (LAST LINE IS TOP OF 1S
1310       .BYTE BLANK2    ;17-18. TOP OF FIRST ROW OF SQUARES
1320 ;                   CHECKERBOARD (8 LINES OF CHARS WITH SPACES INBETWEEN - 22 L
1330       .BYTE 7         ;19-34. 16X5X2 LINE RESOLUTION CHARS
1340       .BYTE BLANK6    ;35-40. FIRST 3 LINES=BOTTOM OF PREVIOUS SQUARE.
1350       .BYTE 7         ;41-56
1360       .BYTE BLANK6    ;57-62. LAST 3 LINES=TOP OF NEXT SQUARE.
1370       .BYTE 7         ;63-78
1380       .BYTE BLANK6    ;79-84
1390       .BYTE 7         ;85-100
1400       .BYTE BLANK6    ;101-106
1410       .BYTE 7         ;107-122
1420       .BYTE BLANK6    ;123-128
1430       .BYTE 7         ;129-144
1440       .BYTE BLANK6    ;145-150
1450       .BYTE 7         ;151-166
1460       .BYTE BLANK6    ;167-172
1470       .BYTE 7         ;173-188
1480 ;                   NEXT THREE LINES ARE BOTTOM OF PREVIOUS SQUARE
1490       .BYTE BLANK2    ;189-190. END OF NORMAL DISPLAY (SHOULD BE ON SCREEN ON ALL
1500       .BYTE 6         ;191-198. BOTTOM BORDER (MAY OVERSCAN, BUT NOT ESSENTIAL TO
1510       .BYTE JMPWT     ;WAIT FOR NEXT VBLANK, THEN START OVER
1520       .WORD DSP
1530 ;
1540 ;
1550 ;DSP -- DISPLAY LIST INTERRUPT HANDLER.
1560 ;CHANGES CHARACTER BASE AND WIDTH OF DISPLAY FOR SPECIAL CHECKERS GRAPHICS
1570 ;THE OS WILL CHANGE CHBASE BACK TO NORMAL DURING VERTICAL BLANK.
1580 ;

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1590 NCHR
1600     PHA
1610     LDA #GR/256
1620     STA CHBASE
1630 ;
1640 ;INSTRUCTION FETCH DMA ENABLE, P/M 2 LINE RES, P/M DMA ENABLE, NARROW SCREEN (128
1650     LDA #$2D
1660     STA DMACTL
1670     PLA
1680     RTI
1690 .PAGE
1700 ;
1710 ;INITIALIZATION CODE -- START EXECUTION HERE
1720 ;
1730     *= PMB+$700
1740 ;
1750 ;INIT OS'S DMACTL VRRIRBLE
1760 ;INSTRUCTION FETCH DMA ENABLE, P/M 2 LINE RES, P/M DMA ENABLE, STANDARD SCREEN (1
1770 ;
1780     LDA #$2E
1790     STA SDMCTL
1800 ;
1810 ;CLEAR RAM
1820 ;
1830     LDA #0
1840     TAX
1850 INITLP
1860     STA PMB,X
1870     STA PMB+$100,X
1880     STA PMB+$200,X
1890     STA PMB+$300,X
1900     STA PMB+$400,X
1910     INX
1920     BNE INITLP
1930 ;
1940 ;INITIALIZE MISSILE GRAPHICS FOR BORDERS
1950 ;
1960     LDA #$0E
1970     LDY #$5E
1980 LQPZ STA GRM03+$14,Y
1990     DEY
2000     BNE LQPZ
2010 ;
2020 ;INITIALIZE TOP AND BOTTOM BORDERS.
2030 ;
2040     LDY #16
2050     LDA #CLBOR+BORDER
2060 TBLP STA TOPBRD-1,Y
2070     STA BOTBRD-1,Y
2080     DEY
2090     BNE TBLP ; CONTINUE UNTIL Y=0
2100 ;
2110 ;INITIALIZE PLAYER GRAPHICS FOR SQUARES (CHECKER BOARD) Y=0
2120 ;
2130     LDA #$F0
2140 IN2   LDX #10
2150 IN3   STA GRP0+$18,Y
2160     STA GRP1+$18,Y
2170     STA GRP2+$18,Y

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2180      STA  GRP3+$18,Y
2190 ;
2200      PHA
2210      LDA  #$0A
2220      STA  GRM03+$18,Y ;REST OF MISSILE GRAPHICS
2230      PLA
2240      INY
2250      DEX
2260      BPL  IN3
2270      EOR  #$FF      ;FILL IN OPPOSITE SQUARES
2280      CPY  #88
2290      BCC  IN2
2300      LDY  #8
2310 ;
2320 ; INITIALIZE PLAYER AND MISSILE POSITIONS AND COLORS
2330 ;
2340 IN4   LDA  ITBL,Y
2350      STA  HPOSP0,Y
2360      TXA          ;$FF
2370      STA  SIZEP0,Y ;$03 INDICATES 4 TIMES NORMAL SIZE (REST IS DON'T CARE)
2380      LDA  ITBL1,Y
2390      STA  PCOLR0,Y
2400      DEY
2410      BPL  IN4
2420 ;
2430 ;OS, ANTIC, POKEY INITIALIZATION
2440 ;
2450      LDA  #DSP&$FF ; DISPLAY LIST START ADDRESS (LSB)
2460      STA  SDLSTL
2470      LDA  #DSP/256 ; MSB OF ADDRESS
2480      STA  SDLSTH
2490      LDA  #3      ;ENABLE PLAYER/MISSILE DMA TO GRAPHICS REGS.
2500      STA  GRACTL
2510      LDA  #PMB/256 ;MSB OF ADDRESS OF PLAYER/MISSILE GRAPHICS
2520      STA  PMBASE
2530      LDA  #$14    ;5TH PLAYER ENABLE (USE PF3 FOR MISSILE COLOR), PF TAKES PR
2540      STA  GPRIOR  ;OS PRIORITY REG
2550      LDA  #NCHR&$FF ;DISPLAY LIST INTERRUPT VECTOR (LSB)
2560      STA  VDSLST
2570      LDA  #NCHR/256
2580      STA  VDSLST+1
2590      STX  NMIEN   ;X=$FF   $C0 ENABLES DISPLAY LIST & VBLANK INTERRUPTS.
2600 ;
2610 ;INITIALIZE BOARD DISPLAY
2620 ;
2630      LDX  #11
2640 BRDLP
2650      LDA  #CHECKER+CLP0 ;HUMAN PIECES ON SQUARES 0-11
2660      STA  BOARD,X
2670      LDA  #CHECKER+CLP1 ;COMPUTER PIECES ON SQUARES 20-31
2680      STA  BOARD+20,X
2690      DEX
2700      BPL  BRDLP
2710 ;
2720 ;MOVE COPYRIGHT MESSAGE TO MESSAGE DISPLAY LINE
2730 ;
2740      LDX  #19
2750 IN6   LDA  COPY,X
2760      STA  TITL,X

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```

2770         DEX
2780         BPL  IN6
2790 ;
2800 ;LOOP TO MOVE BOARD TO GRAPHICS AREA.
2810 ;THE CHECKERS PROGRAM LOGIC COULD BE ADDED HERE OR A VBLANK INTERRUPT COULD BE US
2820 ;
2830 LOOP
2840         JSR  UPCHR
2850         JMP  LOOP
2860 ;
2870 ;
2880 ;
2890 ;
2900 ;UPCHR -- SUBROUTINE TO MOVE 32 BYTES OF CHECKER BOARD TO DISPLAY RAM.
2910 ;
2920 UPCHR
2930         LDX  #31          ;SQUARE 31 = UPPER LEFT
2940         LDY  #0
2950 UPLP1
2960         LDA  #4-1        ;4 SQUARES/LINE
2970         STA  T0
2980 UPLP2
2990         LDA  BOARD,X
3000         STA  BRDSP+2,Y ; FOR ROWS SHIFTED TO RIGHT
3010         LDA  BOARD-4,X
3020         STA  BRDSP+$10,Y ; FOR ROWS SHIFTED TO LEFT
3030         INY
3040         INY
3050         INY
3060         INY
3070         DEX
3080         DEC  T0
3090         BPL  UPLP2
3100 ;
3110         TYA
3120         CLC
3130         ADC  #$10
3140         TAY
3150         TXA
3160         SBC  #4-1        ;CARRY IS CLEAR (SUBTRACT 4)
3170         TAX
3180         BCS  UPLP1
3190         RTS
3200 ;
3210 ;
3220 ;
3230 ;
3240 ;DATA
3250 ;HORIZONTAL POSITION OF PLAYERS (SQUARES) AND MISSILES (SIDE BORDERS).
3260 ;M0=RIGHT BORDER, M1=LEFT BORDER
3270 ;M2 & M3 ARE PLACED WITH M1.
3280 ;           P0, P1, P2, P3, M0, M1, M2, M2
3290 ITBL
3300         .BYTE $3C,$5C,$7C,$9C,$BC,$38,$38,$38
3310 ;
3320 ;COLOR TABLE
3330 ITBL1
3340         .BYTE $34,$34,$34,$34 ;4 PLAYERS (RED SQUARES)
3350         .BYTE $36          ;PF0 RED CHECKERS AND MESSAGES

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3360 .BYTE $88 ;PF1 BLUE CHARACTERS
3370 .BYTE $0E ;PF2 WHITE CHECKERS AND MESSAGES
3380 .BYTE $26 ;PF3 YELLOW BORDER (CHARS & MISSILES)
3390 .BYTE 0 ;BK: BLACK BACKGROUND
3400 ;
3410 ;"COPYRIGHT ATARI 1980" MESSAGE
3420 ;
3430 OF = $00 ;FOR PF0 COLOR (RED)
3440 OF2 = $80 ;FOR PF2 COLOR (WHITE)
3450 OF3 = $40 ;FOR PF1 COLOR (BLUE)
3460 TGTBL
3470 COPY .BYTE SPI,CI+OF,OI+OF,PI+OF,YI+OF,RI+OF,II+OF,GI+OF,HI+OF,TI+OF
3480 .BYTE AI+OF2,TI+OF2,AI+OF2,RI+OF2,II+OF2,N1I+OF3,N9I+OF3,N8I+OF3,N0I+OF3

```

## Assembled Source Code with 0 errors#

```

0000 10 .TITLE "ATARI 800 CHECKERS DISPLAY BY C. SHAW 3/31/80"
20 ;
30 ;COPYRIGHT ATARI 1980
40 ;
50 ;THIS IS AN EXAMPLE OF A DISPLAY LIST WHICH USES CHARACTER MAPPING TO
60 ;PRODUCE THE CHECKERS AND THE TOP AND BOTTOM BORDERS OF THE BOARD.
70 ;PLAYERS ARE USED FOR THE RED SQUARES. THIS GIVES 6 COLORS WITHOUT
80 ;CHANGING THE COLOR REGISTERS.
90 ;MISSILES ARE USED FOR THE LEFT AND RIGHT BORDERS.
0100 ;THE PROGRAM STARTS AT THE LOCATION SPECIFIED BY PMB.
0110 ;A FEW TRICKS ARE USED TO SAVE RAM, BUT FURTHER OPTIMIZATION IS POSSI
0120 ;ROM CARTRIDGE.
0140 ;
0150 ;COLLEEN (ATARI 800) EQUATES
0160 ;
D409 0170 CHBASE = $D409
D400 0180 DMACTL = $D400
022F 0190 SDMCTL = $022F
D000 0200 HPOSP0 = $D000
D008 0210 SIZEP0 = $D008
02C0 0220 PCOLR0 = $02C0
0230 0230 SDLSTL = $0230
0231 0240 SDLSTH = $0231
D01D 0250 GRACTL = $D01D
D407 0260 PMBASE = $D407
026F 0270 GPRIOR = $026F
0200 0280 VDLSLST = $0200
D40E 0290 NMIEN = $D40E
0300 ;
0310 ;DISPLAY LIST EQUATES
0320 ;
0080 0330 INT = $80 ;DISPLAY LIST INTERRUPT (BIT 7 OF NMI STATUS)
0041 0340 JMPWT = $41 ;JUMP AND WAIT UNTIL END OF NEXT VERTICAL BLANK
0040 0350 RELOAD = $40 ;RELOAD MEM SCAN COUNTER (2 BYTES)
0020 0360 VSC = $20 ;VERTICAL SCROLL ENABLE
0010 0370 HSC = $10 ;HORIZONTAL SCROLL ENABLE
0001 0380 JUMP = 1 ;JUMP INSTRUCTION (2 BYTES)
0000 0390 BLANK1 = 0 ;1 BLANK TV LINE
0010 0400 BLANK2 = $10 ;2 BLANK LINES
0020 0410 BLANK3 = $20 ;3
0030 0420 BLANK4 = $30 ;4
0040 0430 BLANK5 = $40 ;5

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0050      0440 BLANK6 =      $50      ;6
0060      0450 BLANK7 =      $60      ;7
0070      0460 BLANK8 =      $70      ;8 BLANK TV LINES

```

ATARI 800 CHECKERS DISPLAY BY C. SHAW 3/31/80

```

0000      0470          .PAGE
          0480 ;
0020      0490 INTOFF =      $20          ;USED TO GET INTERNAL CODE FOR UPPER CASE ALPHA
          0500 ;
          0510 ;INTERNAL CHARACTER CODES
          0520 ;
0000      0530 SPI      =      ' -INTOFF
0021      0540 AI      =      'A-INTOFF
0023      0550 CI      =      'C-INTOFF
0024      0560 DI      =      'D-INTOFF
0025      0570 EI      =      'E-INTOFF
0027      0580 GI      =      'G-INTOFF
0028      0590 HI      =      'H-INTOFF
0029      0600 II      =      'I-INTOFF
002F      0610 OI      =      'O-INTOFF
0030      0620 PI      =      'P-INTOFF
0032      0630 RI      =      'R-INTOFF
0034      0640 TI      =      'T-INTOFF
0039      0650 YI      =      'Y-INTOFF
0011      0660 N1I     =      '1-INTOFF
0018      0670 N8I     =      '8-INTOFF
0019      0680 N9I     =      '9-INTOFF
0010      0690 N0I     =      '0-INTOFF
          0700 ;
          0710 ;CHECKERS EQUATES
          0720 ;
          0730 ;CODES FOR SPECIAL CHECKERS CHARACTER SET
          0740 ;
0000      0750 EMPTY   =      0          ;EMPTY SQUARE
0001      0760 CHECKER=      1          ;ORDINARY CHECKER
0002      0770 KING    =      2
0003      0780 CURS    =      3          ;CURSOR (X)
0004      0790 BORDER  =      4          ;USED FOR TOP AND BOTTOM BORDERS OF BOARD
          0800 ;
0000      0810 CLP0    =      0          ;PLAYER 0 (HUMAN)
0080      0820 CLP1    =      $80        ;PLAYER 1 (COMPUTER)
00C0      0830 CLBOR   =      $C0        ;BORDER COLOR (USED TO SET UP 2 MSB'S OF CHAR)
5000      0840 PMB     =      $5000      ;PLAYER MISSILE BASE ADDRESS & PROGRAM LOCATION

```

ATARI 800 CHECKERS DISPLAY BY C. SHAW 3/31/80

```

0000      0850          .PAGE
          0860 ;
          0870 ; RAM VARIABLES
          0880 ;
0000      0890          *=      PMB
5000      0900 BOARD   *=      *+32      ;CHECKER BOARD (ONLY 32 BLOCK SQUARES ARE USE
5020      0910 T0      *=      *+1      ;TEMP FOR MOVING BOARD TO MEM MAP
          0920 ;

```



```

0930 ;PLAYER AND MISSILE GRAPHICS.
0940 ;PLAYERS ARE USED FOR SQUARES, MISSILES FOR LEFT AND RIGHT BORDERS.
0950 ;
5021 0960      *=    PMB+$180
5180 0970 GRM03 *=    *+$80      ;MISSILE GRAPHICS
5200 0980 GRP0  *=    *+$80      ;PLAYER 0 GRAPHICS
5280 0990 GRP1  *=    *+$80      ;PLAYER 1
5300 1000 GRP2  *=    *+$80      ;      2
5380 1010 GRP3  *=    *+$80      ;      3
      1020 ;
5400 1030 TITL  *=    *+20      ;TOP LINE OF CHARS -- ATASCII MESSAGE
5414 1040 TOPBRD *=    *+16      ;TOP BORDER OF BOARD
5424 1050 BRDSP *=    8*16+*    ;BOARD DISPLAY
54A4 1060 BOTBRD *=    *+16      ;BOTTOM BORDER

```

ATARI 800 CHECKERS DISPLAY BY C. SHAW 3/31/80

```

54B4 1070      .PAGE
      1080 ;
      1090 ;GP -- SPECIAL CHECKERS CHARACTER SET (ONLY CODES 0-4 ARE USED).
      1100 ;
54B4 1110      *=    PMB+$600
      1120 GR
5600 00      1130      .BYTE 0,0,0,0,0,0,0,0,0 ; BLANK (0)
5601 00
5602 00
5603 00
5604 00
5605 00
5606 00
5607 00
5608 3C      1140      .BYTE $3C,$7E,$FF,$FF,$FF,$FF,$7E,$3C ;CHECKER (1)
5609 7E
560A FF
560B FF
560C FF
560D FF
560E 7E
560F 3C
5610 3C      1150      .BYTE $3C,$7E,$A5,$A5,$C3,$C3,$7E,$3C ;KING (2)
5611 7E
5612 A5
5613 A5
5614 C3
5615 C3
5616 7E
5617 3C
5618 C3      1160      .BYTE $C3,$66,$3C,$18,$18,$3C,$66,$C3 ;CURSOR (3)
5619 66
561A 3C
561B 18
561C 18
561D 3C
561E 66
561F C3
5620 00      1170      .BYTE 0,$FF,$FF,$FF,$FF,$FF,$FF,0 ;BORDER (4)
5621 FF

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5622 FF  
5623 FF  
5624 FF  
5625 FF  
5626 FF  
5627 00

ATARI 800 CHECKERS DISPLAY BY C. SHAW 3/31/80

```
5628          1180          .PAGE
              1190 ;
              1200 ;
              1210 ;DISPLAY LIST
              1220 ;
              1230 DSP
5628 70       1240          .BYTE BLANK8      ;24 BLANK LINES
5629 70       1250          .BYTE BLANK8
562A 70       1260          .BYTE BLANK8
562B 46       1270          .BYTE RELOAD+6 ;LINES 0-7 MESSAGE LINE: 20 ACROSS X 5 COLOR X
562C 0054     1280          .WORD TITL
562E 80       1290          .BYTE INT+BLANK1 ;8. INTERRUPT TO CHANGE CHARACTER BASE ADDRESS
562F 06       1300          .BYTE 6          ;9-16. TOP BORDER: 16 X 5 X 1 CHARS (LAST LINE
5630 10       1310          .BYTE BLANK2      ;17-18. TOP OF FIRST ROW OF SQUARES
              1320 ;
              1330          .BYTE 7          ;19-34. 16X5X2 LINE RESOLUTION CHARS
5631 07       1330          .BYTE 7
5632 50       1340          .BYTE BLANK6      ;35-40. FIRST 3 LINES=BOTTOM OF PREVIOUS SQUARE
5633 07       1350          .BYTE 7          ;41-56
5634 50       1360          .BYTE BLANK6      ;57-62. LAST 3 LINES=TOP OF NEXT SQUARE.
5635 07       1370          .BYTE 7          ;63-78
5636 50       1380          .BYTE BLANK6      ;79-84
5637 07       1390          .BYTE 7          ;85-100
5638 50       1400          .BYTE BLANK6      ;101-106
5639 07       1410          .BYTE 7          ;107-122
563A 50       1420          .BYTE BLANK6      ;123-128
563B 07       1430          .BYTE 7          ;129-144
563C 50       1440          .BYTE BLANK6      ;145-150
563D 07       1450          .BYTE 7          ;151-166
563E 50       1460          .BYTE BLANK6      ;167-172
563F 07       1470          .BYTE 7          ;173-188
              1480 ;
              1490          .BYTE BLANK2      ;189-190. END OF NORMAL DISPLAY (SHOULD BE ON S
5640 10       1490          .BYTE BLANK2
5641 06       1500          .BYTE 6          ;191-198. BOTTOM BORDER (MAY OVERSCAN, BUT NOT
5642 41       1510          .BYTE JMPWT      ;WAIT FOR NEXT VBLANK, THEN START OVER
5643 2856     1520          .WORD DSP
              1530 ;
              1540 ;
              1550 ;DSP -- DISPLAY LIST INTERRUPT HANDLER.
              1560 ;CHANGES CHARACTER BASE AND WIDTH OF DISPLAY FOR SPECIAL CHECKERS GRA
              1570 ;THE OS WILL CHANGE CHBASE BACK TO NORMAL DURING VERTICAL BLANK.
              1580 ;
              1590 NCHR
5645 48       1600          PHA
5646 A956     1610          LDA #GR/256
5648 8D09D4   1620          STA CHBASE
              1630 ;
              1640 ;INSTRUCTION FETCH DMA ENABLE, P/M 2 LINE RES, P/M DMA ENABLE, NARROW
564B A92D     1650          LDA #$2D
```

```
564D 8D00D4 1660      STA  DMACTL
5650 68      1670      PLA
5651 40      1680      RTI
```

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```
5652      1690      .PAGE
          1700 ;
          1710 ;INITIALIZATION CODE -- START EXECUTION HERE
          1720 ;
5652      1730      *=   PMB+$700
          1740 ;
          1750 ;INIT OS'S DMACTL VRRIRBLE
          1760 ;INSTRUCTION FETCH DMA ENABLE, P/M 2 LINE RES, P/M DMA ENABLE, STAND
          1770 ;
5700 A92E  1780      LDA  #$2E
5702 8D2F02 1790      STA  SDMCTL
          1800 ;
          1810 ;CLEAR RAM
          1820 ;
5705 A900  1830      LDA  #0
5707 AA    1840      TAX
          1850 INITLP
5708 9D0050 1860      STA  PMB,X
570B 9D0051 1870      STA  PMB+$100,X
570E 9D0052 1880      STA  PMB+$200,X
5711 9D0053 1890      STA  PMB+$300,X
5714 9D0054 1900      STA  PMB+$400,X
5717 E8    1910      INX
5718 D0EE  1920      BNE  INITLP
          1930 ;
          1940 ;INITIALIZE MISSILE GRAPHICS FOR BORDERS
          1950 ;
571A A90E  1960      LDA  #$0E
571C A05E  1970      LDY  #$5E
571E 999451 1980 LQPZ  STA  GRM03+$14,Y
5721 88    1990      DEY
5722 D0FA  2000      BNE  LQPZ
          2010 ;
          2020 ;INITIALIZE TOP AND BOTTOM BORDERS.
          2030 ;
5724 A010  2040      LDY  #16
5726 A9C4  2050      LDA  #CLBOR+BORDER
5728 991354 2060 TBLP  STA  TOPBRD-1,Y
572B 99A354 2070      STA  BOTBRD-1,Y
572E 88    2080      DEY
572F D0F7  2090      BNE  TBLP      ; CONTINUE UNTIL Y=0
          2100 ;
          2110 ;INITIALIZE PLAYER GRAPHICS FOR SQUARES (CHECKER BOARD) Y=0
          2120 ;
5731 A9F0  2130      LDA  #$F0
5733 A20A  2140 IN2   LDX  #10
5735 991852 2150 IN3   STA  GRP0+$18,Y
5738 999852 2160      STA  GRP1+$18,Y
573B 991853 2170      STA  GRP2+$18,Y
573E 999853 2180      STA  GRP3+$18,Y
          2190 ;
```

```

5741 48      2200      PHA
5742 A90A    2210      LDA #0A
5744 999851 2220      STA GRM03+$18,Y ;REST OF MISSILE GRAPHICS
5747 68      2230      PLA
5748 C8      2240      INY
5749 CA      2250      DEX
574A 10E9    2260      BPL IN3
574C 49FF    2270      EOR #$FF      ;FILL IN OPPOSITE SQUARES

```

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```

574E C058    2280      CPY #88
5750 90E1    2290      BCC IN2
5752 A008    2300      LDY #8
          2310 ;
          2320 ; INITIALIZE PLAYER AND MISSILE POSITIONS AND COLORS
          2330 ;
5754 B9D857 2340 IN4    LDA ITBL,Y
5757 9900D0 2350      STA HPOSP0,Y
575A 8A      2360      TXA          ;$FF
575B 9908D0 2370      STA SIZEP0,Y ;$03 INDICATES 4 TIMES NORMAL SIZE (REST IS DON
575E B9E057 2380      LDA ITBL1,Y
5761 99C002 2390      STA PCOLR0,Y
5764 88      2400      DEY
5765 10ED    2410      BPL IN4
          2420 ;
          2430 ;OS, ANTIC, POKEY INITIALIZATION
          2440 ;
5767 A928    2450      LDA #DSP&$FF ; DISPLAY LIST START ADDRESS (LSB)
5769 8D3002 2460      STA SDLSTL
576C A956    2470      LDA #DSP/256 ; MSB OF ADDRESS
576E 8D3102 2480      STA SDLSTH
5771 A903    2490      LDA #3      ;ENABLE PLAYER/MISSILE DMA TO GRAPHICS REGS.
5773 8D1DD0 2500      STA GRACTL
5776 A950    2510      LDA #PMB/256 ;MSB OF ADDRESS OF PLAYER/MISSILE GRAPHICS
5778 8D07D4 2520      STA PMBASE
577B A914    2530      LDA #$14    ;5TH PLAYER ENABLE (USE PF3 FOR MISSILE COLOR),
577D 8D6F02 2540      STA GPRIOR ;OS PRIORITY REG
5780 A945    2550      LDA #NCHR&$FF ;DISPLAY LIST INTERRUPT VECTOR (LSB)
5782 8D0002 2560      STA VDSLST
5785 A956    2570      LDA #NCHR/256
5787 8D0102 2580      STA VDSLST+1
578A 8E0ED4 2590      STX NMIEEN ;X=$FF $C0 ENABLES DISPLAY LIST & VBLANK INTE
          2600 ;
          2610 ;INITIALIZE BOARD DISPLAY
          2620 ;
578D A20B    2630      LDX #11
          2640 BRDLP
578F A901    2650      LDA #CHECKER+CLP0 ;HUMAN PIECES ON SQUARES 0-11
5791 9D0050 2660      STA BOARD,X
5794 A981    2670      LDA #CHECKER+CLP1 ;COMPUTER PIECES ON SQUARES 20-31
5796 9D1450 2680      STA BOARD+20,X
5799 CA      2690      DEX
579A 10F3    2700      BPL BRDLP
          2710 ;
          2720 ;MOVE COPYRIGHT MESSAGE TO MESSAGE DISPLAY LINE
          2730 ;

```

```

579C A213 2740 LDX #19
579E BDE957 2750 IN6 LDA COPY,X
57A1 9D0054 2760 STA TITL,X
57A4 CA 2770 DEX
57A5 10F7 2780 BPL IN6
2790 ;
2800 ;LOOP TO MOVE BOARD TO GRAPHICS AREA.
2810 ;THE CHECKERS PROGRAM LOGIC COULD BE ADDED HERE OR A VBLANK INTERRUPT
2820 ;
2830 LOOP
57A7 20AD57 2840 JSR UPCHR
57AA 4CA757 2850 JMP LOOP
2860 ;

```

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```

2870 ;
2880 ;
2890 ;
2900 ;UPCHR -- SUBROUTINE TO MOVE 32 BYTES OF CHECKER BOARD TO DISPLAY RAM
2910 ;
2920 UPCHR
57AD A21F 2930 LDX #31 ;SQUARE 31 = UPPER LEFT
57AF A000 2940 LDY #0
2950 UPLP1
57B1 A903 2960 LDA #4-1 ;4 SQUARES/LINE
57B3 8D2050 2970 STA T0
2980 UPLP2
57B6 BD0050 2990 LDA BOARD,X
57B9 992654 3000 STA BRDSP+2,Y ; FOR ROWS SHIFTED TO RIGHT
57BC BDFC4F 3010 LDA BOARD-4,X
57BF 993454 3020 STA BRDSP+$10,Y ; FOR ROWS SHIFTED TO LEFT
57C2 C8 3030 INY
57C3 C8 3040 INY
57C4 C8 3050 INY
57C5 C8 3060 INY
57C6 CA 3070 DEX
57C7 CE2050 3080 DEC T0
57CA 10EA 3090 BPL UPLP2
3100 ;
57CC 98 3110 TYA
57CD 18 3120 CLC
57CE 6910 3130 ADC #$10
57D0 A8 3140 TAY
57D1 8A 3150 TXA
57D2 E903 3160 SBC #4-1 ;CARRY IS CLEAR (SUBTRACT 4)
57D4 AA 3170 TAX
57D5 B0DA 3180 BCS UPLP1
57D7 60 3190 RTS
3200 ;
3210 ;
3220 ;
3230 ;
3240 ;DATA
3250 ;HORIZONTAL POSITION OF PLAYERS (SQUARES) AND MISSILES (SIDE BORDERS)
3260 ;M0=RIGHT BORDER, M1=LEFT BORDER
3270 ;M2 & M3 ARE PLACED WITH M1.

```

```

3280 ;                P0, P1, P2, P3, M0, M1, M2, M2
3290 ITBL
57D8 3C                3300      .BYTE $3C,$5C,$7C,$9C,$BC,$38,$38,$38
57D9 5C
57DA 7C
57DB 9C
57DC BC
57DD 38
57DE 38
57DF 38

3310 ;
3320 ;COLOR TABLE
3330 ITBL1
57E0 34                3340      .BYTE $34,$34,$34,$34 ;4 PLAYERS (RED SQUARES)
57E1 34
57E2 34
57E3 34
57E4 36                3350      .BYTE $36          ;PF0 RED CHECKERS AND MESSAGES

```

ATARI 800 CHECKERS DISPLAY BY C. SHAW 3/31/80

```

57E5 88                3360      .BYTE $88          ;PF1 BLUE CHARACTERS
57E6 0E                3370      .BYTE $0E          ;PF2 WHITE CHECKERS AND MESSAGES
57E7 26                3380      .BYTE $26          ;PF3 YELLOW BORDER (CHARS & MISSILES)
57E8 00                3390      .BYTE 0           ;BK: BLACK BACKGROUND
3400 ;
3410 ;"COPYRIGHT ATARI 1980" MESSAGE
3420 ;
0000                3430 OF      =      $00          ;FOR PF0 COLOR (RED)
0080                3440 OF2     =      $80          ;FOR PF2 COLOR (WHITE)
0040                3450 OF3     =      $40          ;FOR PF1 COLOR (BLUE)
3460 TGTBL
57E9 00                3470 COPY     .BYTE SPI,CI+OF,OI+OF,PI+OF,YI+OF,RI+OF,II+OF,GI+OF,HI+OF,TI+O
57EA 23
57EB 2F
57EC 30
57ED 39
57EE 32
57EF 29
57F0 27
57F1 28
57F2 34
57F3 A1                3480      .BYTE AI+OF2,TI+OF2,AI+OF2,RI+OF2,II+OF2,N1I+OF3,N9I+OF3,N8I+O
57F4 B4
57F5 A1
57F6 B2
57F7 A9
57F8 51
57F9 59
57FA 58
57FB 50
0 ERRORS

```