RCA COSMAC ViP
Game Manual

RCA COSMAC VIP
Game Manual

Foreword

This Manual contains program listings for sixteen games specially designed for use with the RCA COSMAC VIP (Video Interface Processor) CDP18S711 or CDP18S022. These games supplement the twenty video games listings provided in the basic Instruction Manual for the RCA COSMAC VIP. All sixteen new games require the CHIP-8 interpreter program which loads at 0000. The games start at 0200 and are eight pages.

The listings for these sixteen games are in the same form as the twenty games in the **RCA COSMAC VIP Instruction Manual**. The first column is the memory location at which the instruction byte in the second column is stored. The comments in the third column, which indicate the function of the instruction byte, are not stored in memory.

When you store these new games, all sixteen will easily fit on a 30-minute cassette. If you run into any problems, go back to your **RCA COSMAC VIP Instruction Manual** for a refresher. If you have been developing your own video games, however, you won't need it.

These sixteen games were developed by the computer hobbyists whose names are given below with the titles of the games they developed and programmed. They hope that you will have as much fun playing them as they did in developing them.

Incidentally, if you have developed and programmed any unique new video games or other similar interesting applications of the COSMAC VIP and would like to share them with other hobbyists, tell us about them. We have started our planning for the next edition of the **RCA COSMAC VIP Game Manual** and might be interested in purchasing software that qualifies for publication in it. Contact:

RCA VIP Marketing
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Lancaster, PA 17604

RCA COSMAC VIP Games

1. VIP Pinball

The VIP PINBALL game simulates the action of real pinball machines. The object of the game is to keep your ball in play and score as many points as you can by ball contact with point bumpers. The point value of bumpers changes randomly when hit. Points range from 2 to 9. A score greater than 999 stops the game.

VIP PINBALL can be played by one or two persons. Players take turns scoring points and control flippers on their own keyboard throughout the game. A player can change ball direction with a special key. However, overuse of this feature will result in a "TILT".

How To Play VIP Pinball

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.

2. Turn RUN switch on.

3. Select the one-player game with key 1. Select the two-player game with key 2.

4. In the two-player game, players alternate turns. Players get five balls. The number of balls remaining is shown at the right or left of the players score. Your turn to put a ball in play is shown by a flashing digit (balls remaining) on your side of the TV screen.

5. To put a ball in play, press key 1.

6. Press key 4 to control the left flipper and key 6 to control the right flipper.

7. You can press key 0 to reverse the direction of the ball. This feature is handy for saving a ball (outside the flipper range) that will go out of bounds. This feature simulates physically pushing on a PINBALL game cabinet. Pressing key 0 causes the ball to move at high speed. While the ball travels at high speed, key 0 has no effect.

8. If you overuse key 0, you will cause a "TILT" and the game will stop. If the two-player option was selected and the other player has balls left, press key 1 to put a new ball in play.

9. The game is over when either player scores more than 999 points, when both players have "TILT", or when both use all their balls.

```
0200  6E01   VE=01
0202  EEA1   SKIP;VE NE KEY
0204  120E   GO 020E
0206  6E02   VE=02
0208  EEA1   SKIP;VE NE KEY
020A  1212   GO 0212
020C  1200   GO 0200
020E  6800   V8=00
0210  1214   GO 0214
0212  6801   V8=01
0214  6501   V5=01
0216  66E8   V6=E8
0218  A67F   I=067F
021A  0634   MLS@0634
021C  FC01
021E  4C00   SKIP;VC NE 00
0220  1234   GO 0234
0222  0634   MLS@0634
0224  F001
0226  0603   MLS@0603
0228  122A   GO 022A
022A  05E3   MLS@05E3
022C  70FF   V0+FF
022E  3000   SKIP;V0 EQ 00
0230  1226   GO 0226
0232  121A   GO 021A
0234  A68A   I=068A
0236  0642   MLS@0642
```

```
0238  A69A   I=069A
023A  0628   MLS@0628
023C  0501
023E  4800   SKIP;V8 NE 00
0240  1246   GO 0246
0242  0628   MLS@0628
0244  0501
0246  A690   I=0690
0248  063A   MLS@063A
024A  F801
024C  C107   V1=RND
024E  7103   V1+03
0250  063A   MLS@063A
0252  F101
0254  063A   MLS@063A
0256  F101
0258  4800   SKIP;V8 NE 00
025A  1262   GO 0262
025C  6A01   VA=01
025E  252E   DO 052E
0260  2550   DO 0550
0262  6A00   VA=00
0264  252E   DO 052E
0266  2550   DO 0550
0268  6116   V1=16
026A  600A   V0=0A
026C  A67C   I=067C
```

```
026E  D013  SHOW 3MI@V0V1          02DC  0603  MLS@0603
0270  6019  V0=19                  02DE  12EA  GO 02EA
0272  D013  SHOW 3MI@V0V1          02E0  12DC  GO 02DC
0274  6024  V0=24                  02E2  A64D  I=064D
0276  D013  SHOW 3MI@V0V1          02E4  F41E  I=I+V4
0278  6033  V0=33                  02E6  F065  V0:V0=MI
027A  D013  SHOW 3MI@V0V1          02E8  8400  V4=V0
027C  6104  V1=04                  02EA  8C40  VC=V4
027E  247C  DO 047C                02EC  05E3  MLS@05E3
0280  71FF  V1+FF                  02EE  61EF  V1=EF
0282  3100  SKIP;V1 EQ 00          02F0  8165  V1=V1-V6
0284  127E  GO 027E                02F2  4F00  SKIP;VF NE 00
0286  2578  DO 0578                02F4  1334  GO 0334
0288  2592  DO 0592                02F6  0608  MLS@0608
028A  6A00  VA=00                  02F8  13AA  GO 03AA
028C  6400  V4=00                  02FA  A693  I=0693
028E  6E01  VE=01                  02FC  0634  MLS@0634
0290  EEA1  SKIP;VE NE KEY         02FE  F100
0292  12A8  GO 02A8                0300  3103  SKIP;V1 EQ 03
0294  24B4  DO 04B4                0302  130A  GO 030A
0296  FF07  VF=TIME                0304  6E00  VE=00
0298  3F00  SKIP;VF EQ 00          0306  EEA1  SKIP;VE NE KEY
029A  128E  GO 028E                0308  135A  GO 035A
029C  2550  DO 0550                030A  78FF  V8+FF
029E  6F04  VF=04                  030C  3800  SKIP;V8 EQ 00
02A0  FF15  TIME=VF                030E  132E  GO 032E
02A2  6101  V1=01                  0310  A69D  I=069D
02A4  8413                         0312  0634  MLS@0634
02A6  128E  GO 028E                0314  FE00
02A8  4400  SKIP;V4 NE 00          0316  4E00  SKIP;VE NE 00
02AA  2550  DO 0550                0318  1326  GO 0326
02AC  A69A  I=069A                 031A  7EFF  VE+FF
02AE  FA1E  I=I+VA                 031C  063A  MLS@063A
02B0  F065  V0:V0=MI               031E  FE00
02B2  70FF  V0+FF                  0320  8870  V8=V7
02B4  0640  MLS@0640               0322  6CC8  VC=08
02B6  F055  MI=V0:V0               0324  12EC  GO 02EC
02B8  2550  DO 0550                0326  A693  I=0693
02BA  A693  I=0693                 0328  0628  MLS@0628
02BC  0628  MLS@0628               032A  0301
02BE  0301                         032C  1320  GO 0320
02C0  6502  V5=02                  032E  0603  MLS@0603
02C2  663F  V6=3F                  0330  132E  GO 032E
02C4  0603  MLS@0603               0332  12CE  GO 02CE
02C6  12C8  GO 02C8                0334  6F2D  VF=2D
02C8  6404  V4=04                  0336  FF18  TONE=VF
02CA  C707  V7=RND                 0338  FF15  TIME=VF
02CC  2572  DO 0572                033A  24B4  DO 04B4
02CE  A693  I=0693                 033C  FF07  VF=TIME
02D0  F065  V0:V0=MI               033E  3F00  SKIP;VF EQ 00
02D2  F015  TIME=V0                0340  133A  GO 033A
02D4  24B4  DO 04B4                0342  A690  I=0690
02D6  FF07  VF=TIME                0344  0634  MLS@0634
02D8  3F00  SKIP;VF EQ 00          0346  F800
02DA  12D6  GO 02D6                0348  8A83
```

```
034A  A69A  I=069A              03B8  8125  V1=V1-V2
034C  FA1E  I=I+VA              03BA  4F00  SKIP;VF NE 00
034E  F065  V0:V0=MI            03BC  141E  GO  041E
0350  4000  SKIP;V0 NE 00       03BE  8160  V1=V6
0352  1358  GO  0358            03C0  0634  MLS@0634
0354  128C  GO  028C            03C2  F201
0356  2486  DO  0486            03C4  8215  V2=V2-V1
0358  1358  GO  0358            03C6  4F00  SKIP;VF NE 00
035A  A691  I=0691              03C8  141E  GO  041E
035C  FA1E  I=I+VA              03CA  6107  V1=07
035E  F065  V0:V0=MI            03CC  8162  V1=V1&V6
0360  4000  SKIP;V0 NE 00       03CE  A65F  I=065F
0362  137C  GO  037C            03D0  F11E  I=I+V1
0364  0640  MLS@0640            03D2  F065  V0:V0=MI
0366  70FF  V0+FF               03D4  8100  V1=V0
0368  F055  MI=V0:V0            03D6  4100  SKIP;V1 NE 00
036A  A69D  I=069D              03D8  141E  GO  041E
036C  0628  MLS@0628            03DA  2486  DO  0486
036E  1800                      03DC  252E  DO  052E
0370  A693  I=0693              03DE  24B4  DO  04B4
0372  0628  MLS@0628            03E0  A689  I=0689
0374  0101                      03E2  F11E  I=I+V1
0376  2568  DO  0568            03E4  F065  V0:V0=MI
0378  2570  DO  0570            03E6  8F00  VF=V0
037A  12EA  GO  02EA            03E8  A697  I=0697
037C  246E  DO  046E            03EA  4A01  SKIP;VA NE 01
037E  24A4  DO  04A4            03EC  A69A  I=069A
0380  A690  I=0690              03EE  6903  V9=03
0382  0634  MLS@0634            03F0  0640  MLS@0640
0384  F800                      03F2  F065  V0:V0=MI
0386  A69A  I=069A              03F4  0640  MLS@0640
0388  FA1E  I=I+VA              03F6  80F4  V0=V0+VF
038A  6000  V0=00               03F8  6C0A  VC=0A
038C  F055  MI=V0:V0            03FA  80C5  V0=V0-VC
038E  8A83                      03FC  3F00  SKIP;VF EQ 00
0390  78FF  V8+FF               03FE  1402  GO  0402
0392  A690  I=0690              0400  700A  V0+0A
0394  063A  MLS@063A            0402  F055  MI=V0:V0
0396  F800                      0404  0640  MLS@0640
0398  3800  SKIP;V8 EQ 00       0406  79FF  V9+FF
039A  1358  GO  0358            0408  3900  SKIP;V9 EQ 00
039C  6E01  VE=01               040A  13F0  GO  03F0
039E  EEA1  SKIP;VE NE KEY      040C  3F00  SKIP;VF EQ 00
03A0  13A4  GO  03A4            040E  1356  GO  0356
03A2  139C  GO  039C            0410  C201  V2=RND
03A4  24A4  DO  04A4            0412  3200  SKIP;V2 EQ 00
03A6  246E  DO  046E            0414  141A  GO  041A
03A8  1342  GO  0342            0416  247C  DO  047C
03AA  6D02  VD=02               0418  141C  GO  041C
03AC  FD18  TONE=VD             041A  2486  DO  0486
03AE  2570  DO  0570            041C  252E  DO  052E
03B0  A67A  I=067A              041E  24B4  DO  04B4
03B2  8160  V1=V6               0420  46E8  SKIP;V6 NE E8
03B4  0634  MLS@0634            0422  1466  GO  0466
03B6  F201                      0424  46EF  SKIP;V6 NE EF
```

```
0426  1466  GO  0466
0428  6100  V1=00
042A  6C02  VC=02
042C  05E3  MLS@05E3
042E  0608  MLS@0608
0430  7101  V1+01
0432  6C07  VC=07
0434  05E3  MLS@05E3
0436  0608  MLS@0608
0438  7102  V1+02
043A  6C09  VC=09
043C  05E3  MLS@05E3
043E  0608  MLS@0608
0440  7104  V1+04
0442  6C03  VC=03
0444  05E3  MLS@05E3
0446  0608  MLS@0608
0448  7108  V1+08
044A  6C04  VC=04
044C  05E3  MLS@05E3
044E  4105  SKIP;V1 NE 05
0450  12E2  GO  02E2
0452  4107  SKIP;V1 NE 07
0454  12E2  GO  02E2
0456  410D  SKIP;V1 NE 0D
0458  12E2  GO  02E2
045A  4101  SKIP;V1 NE 01
045C  12E2  GO  02E2
045E  410A  SKIP;V1 NE 0A
0460  146A  GO  046A
0462  410B  SKIP;V1 NE 0B
0464  146A  GO  046A
0466  2568  DO  0568
0468  12EA  GO  02EA
046A  A655  I=0655
046C  12E4  GO  02E4
046E  88A0  V8=VA
0470  6A01  VA=01
0472  2550  DO  0550
0474  6A00  VA=00
0476  2550  DO  0550
0478  8A80  VA=V8
047A  00EE  RET
047C  A689  I=0689
047E  C007  V0=RND
0480  7002  V0+02
0482  F11E  I=I+V1
0484  F055  MI=V0:V0
0486  690B  V9=0B
0488  A675  I=0675
048A  F11E  I=I+V1
048C  F065  V0:V0=MI
048E  8200  V2=V0
0490  A667  I=0667
0492  D297  SHOW 7MI@V2V9
0494  7901  V9+01
0496  7201  V2+01
0498  A689  I=0689
049A  F11E  I=I+V1
049C  F065  V0:V0=MI
049E  F029  I=V0(LSDP)
04A0  D295  SHOW 5MI@V2V9
04A2  00EE  RET
04A4  A66E  I=066E
04A6  6018  V0=18
04A8  6100  V1=00
04AA  D014  SHOW 4MI@V0V1
04AC  6020  V0=20
04AE  A672  I=0672
04B0  D014  SHOW 4MI@V0V1
04B2  00EE  RET
04B4  A68E  I=068E
04B6  F065  V0:V0=MI
04B8  0640  MLS@0640
04BA  3000  SKIP;V0 EQ 00
04BC  14D6  GO  04D6
04BE  6E04  VE=04
04C0  EEA1  SKIP;VE NE KEY
04C2  14EE  GO  04EE
04C4  A69C  I=069C
04C6  F065  V0:V0=MI
04C8  0640  MLS@0640
04CA  3000  SKIP;V0 EQ 00
04CC  14E2  GO  04E2
04CE  6E06  VE=06
04D0  EEA1  SKIP;VE NE KEY
04D2  14F8  GO  04F8
04D4  00EE  RET
04D6  70FF  V0+FF
04D8  A68E  I=068E
04DA  F055  MI=V0:V0
04DC  4004  SKIP;V0 NE 04
04DE  2578  DO  0578
04E0  14C4  GO  04C4
04E2  70FF  V0+FF
04E4  A69C  I=069C
04E6  F055  MI=V0:V0
04E8  4004  SKIP;V0 NE 04
04EA  2592  DO  0592
04EC  00EE  RET
04EE  2502  DO  0502
04F0  6009  V0=09
04F2  6D02  VD=02
04F4  FD18  TONE=VD
04F6  14D8  GO  04D8
04F8  2514  DO  0514
04FA  6009  V0=09
04FC  6D02  VD=02
04FE  FD18  TONE=VD
0500  14E4  GO  04E4
```

```
0502  A0E9  I=00E9
0504  0625  MLS@0625
0506  0628  MLS@0628
0508  0F01
050A  0628  MLS@0628
050C  FF01
050E  0628  MLS@0628
0510  F806
0512  1524  GO  0524
0514  A0EC  I=00EC
0516  0625  MLS@0625
0518  0628  MLS@0628
051A  1F01
051C  0628  MLS@0628
051E  FF01
0520  0628  MLS@0628
0522  F008
0524  0628  MLS@0628
0526  0008
0528  0628  MLS@0628
052A  0000
052C  00EE  RET
052E  6200  V2=00
0530  6B30  VB=30
0532  4A01  SKIP;VA NE 01
0534  6B00  VB=00
0536  6900  V9=00
0538  A694  I=0694
053A  4A01  SKIP;VA NE 01
053C  A697  I=0697
053E  F91E  I=I+V9
0540  F065  V0:V0=MI
0542  F029  I=V0(LSDP)
0544  DB25  SHOW 5MI@VBV2
0546  7B06  VB+06
0548  7901  V9+01
054A  3903  SKIP;V9 EQ 03
054C  1538  GO  0538
054E  00EE  RET
0550  A69A  I=069A
0552  FA1E  I=I+VA
0554  F065  V0:V0=MI
0556  4000  SKIP;V0 NE 00
0558  156E  GO  056E
055A  F029  I=V0(LSDP)
055C  6200  V2=00
055E  6126  V1=26
0560  4A01  SKIP;VA NE 01
0562  6116  V1=16
0564  D125  SHOW 5MI@V1V2
0566  00EE  RET
0568  610A  V1=0A
056A  8145  V1=V1-V4
056C  8410  V4=V1
056E  00EE  RET

0570  C703  V7=RND
0572  7703  V7+03
0574  8870  V8=V7
0576  00EE  RET
0578  A0E9  I=00E9
057A  0625  MLS@0625
057C  0628  MLS@0628
057E  0801
0580  0628  MLS@0628
0582  0001
0584  0628  MLS@0628
0586  0006
0588  0628  MLS@0628
058A  0808
058C  0628  MLS@0628
058E  0800
0590  00EE  RET
0592  A0EC  I=00EC
0594  0625  MLS@0625
0596  0628  MLS@0628
0598  0001
059A  0628  MLS@0628
059C  0001
059E  0628  MLS@0628
05A0  1008
05A2  0628  MLS@0628
05A4  1008
05A6  0628  MLS@0628
05A8  1000
05AA  00EE  RET
05AC  01D6
05AE  D6C6
05B0  D7C6
05B2  D6C6
05B4  CBD7
05B6  D6D6
05B8  D6CB
05BA  D6C1
05BC  D7C1
05BE  D6C1
05C0  CBF8
05C2  08F4
05C4  56D3
05C6  F808
05C8  F556
05CA  D38E
05CC  F63B
05CE  D5F8
05D0  01F4
05D2  56F8
05D4  80AE
05D6  D38E
05D8  FE3B
05DA  D5F8
05DC  01F5
```

05DE	56F8		0634	45A6
05E0	0130		0636	0A56
05E2	D5F8		0638	302A
05E4	FCA7		063A	45A6
05E6	96B7		063C	065A
05E8	E7F8		063E	302A
05EA	05BD		0640	2AD4
05EC	F8AD		0642	F814
05EE	F4F4		0644	AFF8
05F0	ADF8		0646	005A
05F2	F5A6		0648	1A2F
05F4	E672		064A	8F3A
05F6	AE93		064C	45D4
05F8	BC4D		064E	0309
05FA	ACDC		0650	0103
05FC	4DAC		0652	0001
05FE	DC8E		0654	0902
0600	2656		0656	0708
0602	D4F8		0658	0901
0604	00BC		065A	0003
0606	300B		065C	0102
0608	F801		065E	0300
060A	BCF8		0660	0102
060C	F5A6		0662	0203
060E	E672		0664	0304
0610	AE9B		0666	00FC
0612	BFF0		0668	FCFC
0614	AFEF		066A	FCFC
0616	8EF3		066C	FCFC
0618	BE8E		066E	7222
061A	F23A		0670	2222
061C	1F15		0672	4742
061E	159C		0674	4272
0620	3A24		0676	0815
0622	9E5F		0678	2532
0624	D49B		067A	598E
0626	BAD4		067C	E0A0
0628	455A		067E	E004
062A	E58A		0680	0702
062C	F4AA		0682	1706
062E	159A		0684	3F08
0630	7C00		0686	1704
0632	BAD4		0688	0800

2. VIP Message Center

The VIP MESSAGE CENTER program permits you to record in the computer memory and display letters, numbers, and special characters on the TV. The characters saved in the computer memory are recalled for continuous repetitive display of a message on the TV screen. You can choose two types of display formats. The **typewriter format** lets you fill the entire screen; the **ticker tape format** shows a line of characters in motion across the screen. This latter format is useful for words longer than ten characters.

The typewriter display is arranged into five lines of ten characters per line. The ticker tape display shows a line of ten characters. Up to 256 different characters and display commands can be saved in the computer memory. This corresponds to about three completely filled TV screens. There are 56 characters you can select: 0-9, A-Z, space, comma, box, period, colon, ellipsis, exclamation point, question mark, hyphen, dollar sign, cent sign, percent sign, single quote, double quote, plus sign, minus sign, times sign, division sign, slash, and equal sign.

The keyboard controls the selection of a character and starting or stopping the message display. The keyboard also provides the following display commands: the time to delay before displaying more parts of a message, clearing the screen, spacing between characters, and beginning a new line.

Should you make a mistake entering a character, you can correct it. You go through the message stopping where you made your error. You then overwrite the message with the intended character(s).

How To Use VIP Message Center

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.

2. Turn RUN switch on.

3. Select the type of display:
   Key 1 selects the typewriter format and saves the message characters in the computer memory.
   Key 2 selects the ticker tape format and saves the message characters in the computer memory.

4. A flashing character indicates the display position where a character will go when selected. **The flashing character will not appear in the message unless it is saved.**

5. Key 1 selects the next character in the character sequence (see Instruction 11) to the left of the flashing character.
   Key 3 selects the next character in the character sequence to the right of the flashing character. Holding down either 1 or 3 changes the character continuously.
   Key 2 saves the flashing character in memory.
   Key 6 stores a time delay corresponding to how long you hold this key down. The time may be as brief as a quarter of a second.
   Key 7 clears the screen and stores a "clear screen" command.
   Key 8 stores a space character and positions for the next character.
   Key 9 starts a new line (typewriter format only) and stores this command.
   Key 0 starts the message display.
   Key 4 is used to step through the message to allow editing.
   Key 5 stops the display at a character.

6. When you reach the **end of the line (10 character) in the typewriter format** no character will flash. You must press key 9 to start a new line.

7. You can select the space character using keys 1 or 3. See character sequence in Instruction 11.

8. The typewriter format rolls the top line off the screen. These characters are saved.

9. Key 2 is useful for skipping over characters when you are correcting a message. Care must be exercised so that you do not overwrite a stored command (such as a new line) unintentionally.

10. You can change the time for the ticker tape movement by altering location 04B7. Increase this value to increase the delay (units of a 60th of a second).

11. The character sequence is:
   □ 0 1 2 3 4 5 6 7 8 9 A B C D E F G H I J K L M
   N O P Q R S T U V W X Y Z . , ; : ... ! - $ ¢ % ? "
   + − × ÷ / =

                                    ↑
                                  space

```
0200  1300  GO  0300          026E  40F8
0202  5DBF                    0270  80F8
0204  717C                    0272  08F8
0206  466F                    0274  80F8
0208  734B                    0276  88F8
020A  7577                    0278  88F8
020C  3D51                    027A  0808
020E  6355                    027C  F808
0210  6780                    027E  3808
0212  5994                    0280  F880
0214  AC4D                    0282  E080
0216  A183                    0284  8080
0218  8F8B                    0286  80F8
021A  5D61                    0288  88F8
021C  3987                    028A  9088
021E  6FA7                    028C  C8A8
0220  9297                    028E  9888
0222  9D99                    0290  D8A8
0224  A56B                    0292  8888
0226  B5B6                    0294  8888
0228  DCF6                    0296  F888
022A  D1BA                    0298  8888
022C  D9C4                    029A  5020
022E  CC41                    029C  5088
0230  C8D6                    029E  88A8
0232  E1EA                    02A0  D888
0234  F2E5                    02A2  90E0
0236  FBEE                    02A4  9088
0238  B0F8                    02A6  88F8
023A  8888                    02A8  2020
023C  98F8                    02AA  2020
023E  88F8                    02AC  F820
0240  8888                    02AE  2020
0242  1020                    02B0  F8F8
0244  4088                    02B2  F8F8
0246  9090                    02B4  F800
0248  F810                    02B6  0000
024A  10F8                    02B8  0000
024C  0808                    02BA  2020
024E  0808                    02BC  2000
0250  88F8                    02BE  2060
0252  4878                    02C0  2020
0254  48F8                    02C2  2070
0256  4848                    02C4  F8A0
0258  48F8                    02C6  F828
025A  8098                    02C8  F808
025C  88F8                    02CA  3800
025E  8888                    02CC  20F8
0260  88F8                    02CE  A0F8
0262  88F8                    02D0  2000
0264  8080                    02D2  0000
0266  80F8                    02D4  00A8
0268  80E0                    02D6  5050
026A  80F8                    02D8  0000
026C  1020                    02DA  0070
```

```
02DC 0000                          034A EEA1 SKIP;VE NE KEY
02DE 0020                          034C 1430 GO 0430
02E0 4020                          034E 6E06 VE=06
02E2 20F8                          0350 EEA1 SKIP;VE NE KEY
02E4 2020                          0352 140E GO 040E
02E6 00F8                          0354 6E07 VE=07
02E8 0020                          0356 EEA1 SKIP;VE NE KEY
02EA 0000                          0358 13DE GO 03DE
02EC F800                          035A 6E08 VE=08
02EE 00F8                          035C EEA1 SKIP;VE NE KEY
02F0 00F8                          035E 13E6 GO 03E6
02F2 0050                          0360 6E09 VE=09
02F4 2050                          0362 EEA1 SKIP;VE NE KEY
02F6 0020                          0364 13F4 GO 03F4
02F8 0020                          0366 6E00 VE=00
02FA 0008                          0368 EEA1 SKIP;VE NE KEY
02FC 1020                          036A 1430 GO 0430
02FE 4080                          036C FF07 VF=TIME
0300 A5B5 I=05B5                    036E 3F00 SKIP;VF EQ 00
0302 054D MLS@054D                  0370 1336 GO 0336
0304 0000                           0372 450A SKIP;V5 NE 0A
0306 A5B6 I=05B6                    0374 1332 GO 0332
0308 6000 V0=00                     0376 252C DO 052C
030A 054D MLS@054D                  0378 252C DO 052C
030C 3F01                           037A 1332 GO 0332
030E 70FF V0+FF                     037C 6D02 VD=02
0310 3000 SKIP;V0 EQ 00             037E FD18 TONE=VD
0312 130A GO 030A                   0380 450A SKIP;V5 NE 0A
0314 6E01 VE=01                     0382 1332 GO 0332
0316 EEA1 SKIP;VE NE KEY            0384 252C DO 052C
0318 1322 GO 0322                   0386 4600 SKIP;V6 NE 00
031A 6E02 VE=02                     0388 6637 V6=37
031C EEA1 SKIP;VE NE KEY            038A 76FF V6+FF
031E 1322 GO 0322                   038C 2512 DO 0512
0320 1314 GO 0314                   038E 24EE DO 04EE
0322 88E0 V8=VE                     0390 1332 GO 0332
0324 2534 DO 0534                   0392 6D02 VD=02
0326 6636 V6=36                     0394 FD18 TONE=VD
0328 6400 V4=00                     0396 450A SKIP;V5 NE 0A
032A 6500 V5=00                     0398 1332 GO 0332
032C 4802 SKIP;V8 NE 02             039A 252C DO 052C
032E 650B V5=0B                     039C 4636 SKIP;V6 NE 36
0330 2512 DO 0512                   039E 66FF V6=FF
0332 6F02 VF=02                     03A0 7601 V6+01
0334 FF15 TIME=VF                   03A2 138C GO 038C
0336 6E01 VE=01                     03A4 2534 DO 0534
0338 EEA1 SKIP;VE NE KEY            03A6 450A SKIP;V5 NE 0A
033A 137C GO 037C                   03A8 1332 GO 0332
033C 6E02 VE=02                     03AA 24C6 DO 04C6
033E EEA1 SKIP;VE NE KEY            03AC 8360 V3=V6
0340 13A4 GO 03A4                   03AE A5B6 I=05B6
0342 6E03 VE=03                     03B0 F41E I=I+V4
0344 EEA1 SKIP;VE NE KEY            03B2 055F MLS@055F
0346 1392 GO 0392                   03B4 F300
0348 6E04 VE=04                     03B6 7401 V4+01
```

```
03B8  4400  SKIP;V4 NE 00        0426  142A  GO  042A
03BA  1490  GO  0490             0428  1414  GO  0414
03BC  A5B6  I=05B6               042A  6380  V3=80
03BE  F41E  I=I+V4               042C  8311  V3=V3/V1
03C0  0559  MLS@0559             042E  13AE  GO  03AE
03C2  F100                       0430  2534  DO  0534
03C4  413F  SKIP;V1 NE 3F        0432  A5B6  I=05B6
03C6  8160  V1=V6                0434  F41E  I=I+V4
03C8  62C0  V2=C0                0436  0559  MLS@0559
03CA  8212  V2=V2&V1             0438  F100
03CC  4200  SKIP;V2 NE 00        043A  9610  SKIP;V6 NE V1
03CE  13D2  GO  03D2             043C  1488  GO  0488
03D0  8160  V1=V6                043E  450A  SKIP;V5 NE 0A
03D2  8610  V6=V1                0440  145A  GO  045A
03D4  450A  SKIP;V5 NE 0A        0442  252C  DO  052C
03D6  13DC  GO  03DC             0444  4801  SKIP;V8 NE 01
03D8  252C  DO  052C             0446  75FF  V5+FF
03DA  2512  DO  0512             0448  A5B5  I=05B5
03DC  1332  GO  0332             044A  054D  MLS@054D
03DE  00E0  ERASE                044C  0100
03E0  2534  DO  0534             044E  145A  GO  045A
03E2  634F  V3=4F                0450  6400  V4=00
03E4  1404  GO  0404             0452  4802  SKIP;V8 NE 02
03E6  2534  DO  0534             0454  145A  GO  045A
03E8  450A  SKIP;V5 NE 0A        0456  65FF  V5=FF
03EA  1332  GO  0332             0458  00E0  ERASE
03EC  252C  DO  052C             045A  A5B6  I=05B6
03EE  6324  V3=24                045C  F41E  I=I+V4
03F0  24C6  DO  04C6             045E  0559  MLS@0559
03F2  13AE  GO  03AE             0460  F600
03F4  4802  SKIP;V8 NE 02        0462  464F  SKIP;V6 NE 4F
03F6  1332  GO  0332             0464  1494  GO  0494
03F8  2534  DO  0534             0466  464E  SKIP;V6 NE 4E
03FA  450A  SKIP;V5 NE 0A        0468  149C  GO  049C
03FC  1400  GO  0400             046A  61C0  V1=C0
03FE  252C  DO  052C             046C  8162  V1=V1&V6
0400  24FA  DO  04FA             046E  4180  SKIP;V1 NE 80
0402  634E  V3=4E                0470  14D8  GO  04D8
0404  4802  SKIP;V8 NE 02        0472  463F  SKIP;V6 NE 3F
0406  140A  GO  040A             0474  1450  GO  0450
0408  6500  V5=00                0476  4802  SKIP;V8 NE 02
040A  2512  DO  0512             0478  14A2  GO  04A2
040C  13AE  GO  03AE             047A  7501  V5+01
040E  6D02  VD=02                047C  2512  DO  0512
0410  FD18  TONE=VD              047E  4E04  SKIP;VE NE 04
0412  6101  V1=01                0480  14C2  GO  04C2
0414  6F0F  VF=0F                0482  6E05  VE=05
0416  FF15  TIME=VF              0484  EEA1  SKIP;VE NE KEY
0418  EE9E  SKIP;VE EQ KEY       0486  14C2  GO  04C2
041A  142A  GO  042A             0488  7401  V4+01
041C  FF07  VF=TIME              048A  4400  SKIP;V4 NE 00
041E  3F00  SKIP;VF EQ 00        048C  1450  GO  0450
0420  1418  GO  0418             048E  145A  GO  045A
0422  7101  V1+01                0490  252C  DO  052C
0424  413C  SKIP;V1 NE 3C        0492  1450  GO  0450
```

```
0494  00E0  ERASE                   0502  054A  MLS@054A
0496  4802  SKIP;V8 NE 02           0504  6028  V0=28
0498  1488  GO  0488                0506  054D  MLS@054D
049A  149E  GO  049E                0508  0001
049C  24FA  DO  04FA                050A  70FF  V0+FF
049E  65FF  V5=FF                   050C  3000  SKIP;V0 EQ 00
04A0  1488  GO  0488                050E  1506  GO  0506
04A2  A5B5  I=05B5                  0510  00EE  RET
04A4  0559  MLS@0559                0512  450A  SKIP;V5 NE 0A
04A6  F100                          0514  1532  GO  0532
04A8  054D  MLS@054D                0516  A59D  I=059D
04AA  0000                          0518  F51E  I=I+V5
04AC  A08F  I=008F                  051A  F51E  I=I+V5
04AE  054A  MLS@054A                051C  0559  MLS@0559
04B0  4100  SKIP;V1 NE 00           051E  F901
04B2  0567  MLS@0567                0520  0559  MLS@0559
04B4  2512  DO  0512                0522  FA00
04B6  6F10  VF=10                   0524  A202  I=0202
04B8  FF15  TIME=VF                 0526  F61E  I=I+V6
04BA  FF07  VF=TIME                 0528  0559  MLS@0559
04BC  3F00  SKIP;VF EQ 00           052A  F700
04BE  14BA  GO  04BA                052C  A200  I=0200
04C0  147E  GO  047E                052E  F71E  I=I+V7
04C2  2534  DO  0534                0530  D9A5  SHOW 5MI@V9VA
04C4  1332  GO  0332                0532  00EE  RET
04C6  4802  SKIP;V8 NE 02           0534  6B02  VB=02
04C8  14CE  GO  04CE                0536  FB18  TONE=VB
04CA  7501  V5+01                   0538  EEA1  SKIP;VE NE KEY
04CC  14D4  GO  04D4                053A  1538  GO  0538
04CE  A08F  I=008F                  053C  00EE  RET
04D0  054A  MLS@054A                053E  F800
04D2  0567  MLS@0567                0540  AF9A
04D4  2512  DO  0512                0542  BF4A
04D6  00EE  RET                     0544  5F1F
04D8  607F  V0=7F                   0546  8A3A
04DA  8062  V0=V0&V6                0548  43D4
04DC  6F0F  VF=0F                   054A  9BBA
04DE  FF15  TIME=VF                 054C  D445
04E0  FF07  VF=TIME                 054E  5AE5
04E2  3F00  SKIP;VF EQ 00           0550  8AF4
04E4  14E0  GO  04E0                0552  AA15
04E6  70FF  V0+FF                   0554  9A7C
04E8  3000  SKIP;V0 EQ 00           0556  00BA
04EA  14DC  GO  04DC                0558  D445
04EC  1488  GO  0488                055A  A60A
04EE  6F06  VF=06                   055C  5630
04F0  FF15  TIME=VF                 055E  4F45
04F2  FF07  VF=TIME                 0560  A606
04F4  3F00  SKIP;VF EQ 00           0562  5A30
04F6  14F2  GO  04F2                0564  4F2A
04F8  00EE  RET                     0566  D4F8
04FA  A030  I=0030                  0568  06AD
04FC  054A  MLS@054A                056A  F8FF
04FE  053E  MLS@053E                056C  A6E6
0500  A0C8  I=00C8                  056E  8AAC
```

0570	9ABC	0594	2E8E
0572	8CAA	0596	3A79
0574	9CBA	0598	2D8D
0576	F805	059A	3A72
0578	AEF8	059C	D402
057A	07AF	059E	1908
057C	F800	05A0	190E
057E	560A	05A2	1914
0580	FEF1	05A4	191A
0582	5AF8	05A6	1920
0584	007C	05A8	1926
0586	0056	05AA	192C
0588	2A2F	05AC	1932
058A	8F3A	05AE	1938
058C	7F0A	05B0	1938
058E	FEF1	05B2	1938
0590	FA7F	05B4	0D00
0592	5A2A		

3. VIP Bingo

VIP BINGO automatically calls and verifies BINGO numbers. The computer selects numbers randomly and displays the last three numbers drawn. After a player calls "BINGO", the computer will check the player's numbers against a list stored in its memory. The computer adds the numbers checked to give the player a score for that round of play.

There are two modes for drawing numbers. Using the **manual** mode, the operator must press a key to obtain a new number. Using the **automatic** mode, the computer draws numbers every twelve seconds until halted by the operator. Using a third mode, **verify**, the operator enters numbers on the keyboard for the computer to check against the list of numbers called.

How To Play VIP Bingo

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.

2. Turn RUN switch on.

3. Key "A" starts calling numbers in the **manual** mode. Press key "A" for every new number. New numbers appear at the bottom of the display and are rolled upward.

4. Key "B" starts calling the numbers in the **automatic** mode. New numbers appear every twelve seconds until all numbers are called. You can press key "A" to enter the **manual** mode, or key "C" to stop calling numbers.

5. Key "C" starts the **verify** mode. Enter two digits for each number making up a winning BINGO card. (Note: press 01 for B-1, 02 for B-2, 75 for 0-75, etc.) If the number was called, "OK" will show; if it was not called, "NO" will show. If all five numbers are OK, press key "F" to display the score for the numbers entered. The score will be displayed followed by "PT" (point total). You do not have to enter any number for "FREE". If one of the numbers verified was not called, you can resume calling numbers as in Step 3 or 4. You may also press key "C" to restart verify if you make a mistake entering a number.

```
0200  604F  V0=4F
0202  A454  I=0454
0204  2386  DO 0386
0206  654B  V5=4B
0208  6E0A  VE=0A
020A  EEA1  SKIP;VE NE KEY
020C  121C  GO 021C
020E  6E0B  VE=0B
0210  EEA1  SKIP;VE NE KEY
0212  121C  GO 021C
0214  6E0C  VE=0C
0216  EEA1  SKIP;VE NE KEY
0218  1286  GO 0286
021A  1208  GO 0208
021C  2392  DO 0392
021E  88E0  V8=VE
0220  237A  DO 037A
0222  237A  DO 037A
0224  4500  SKIP;V5 NE 00
0226  1208  GO 0208
0228  C77F  V7=RND
022A  7701  V7+01
022C  624B  V2=4B
022E  8275  V2=V2-V7
0230  3F00  SKIP;VF EQ 00
0232  1238  GO 0238
0234  77B5  V7+B5
0236  122C  GO 022C
```

```
0238  A454  I=0454
023A  F71E  I=I+V7
023C  F065  V0:V0=MI
023E  3000  SKIP;V0 EQ 00
0240  1224  GO 0224
0242  041A  MLS@041A
0244  6001  V0=01
0246  F055  MI=V0:V0
0248  75FF  V5+FF
024A  239C  DO 039C
024C  6D08  VD=08
024E  FD18  TONE=VD
0250  6628  V6=28
0252  6D0F  VD=0F
0254  FD15  TIME=VD
0256  6E0A  VE=0A
0258  EEA1  SKIP;VE NE KEY
025A  121C  GO 021C
025C  6E0B  VE=0B
025E  EEA1  SKIP;VE NE KEY
0260  121C  GO 021C
0262  6E0C  VE=0C
0264  EEA1  SKIP;VE NE KEY
0266  1286  GO 0286
0268  FD07  VD=TIME
026A  3D00  SKIP;VD EQ 00
026C  1256  GO 0256
```

```
026E  23C8  DO  03C8            02DC  239C  DO  039C
0270  600A  V0=0A               02DE  A454  I=0454
0272  70FF  V0+FF               02E0  F71E  I=I+V7
0274  3000  SKIP;V0 EQ 00       02E2  040E  MLS@040E
0276  1272  GO  0272            02E4  F100
0278  23C8  DO  03C8            02E6  4100  SKIP;V1 NE 00
027A  76FF  V6+FF               02E8  1324  GO  0324
027C  3600  SKIP;V6 EQ 00       02EA  6302  V3=02
027E  1252  GO  0252            02EC  6202  V2=02
0280  480B  SKIP;V8 NE 0B       02EE  6F00  VF=00
0282  1220  GO  0220            02F0  6003  V0=03
0284  1208  GO  0208            02F2  A4A0  I=04A0
0286  2392  DO  0392            02F4  F21E  I=I+V2
0288  00E0  ERASE               02F6  040E  MLS@040E
028A  6400  V4=00               02F8  FC00
028C  A4A3  I=04A3              02FA  A4A3  I=04A3
028E  6000  V0=00               02FC  F31E  I=I+V3
0290  F033  MI=V0(3DD)          02FE  040E  MLS@040E
0292  6E0A  VE=0A               0300  F100
0294  EEA1  SKIP;VE NE KEY      0302  81F4  V1=V1+VF
0296  121C  GO  021C            0304  81C4  V1=V1+VC
0298  6E0B  VE=0B               0306  6C0A  VC=0A
029A  EEA1  SKIP;VE NE KEY      0308  81C5  V1=V1-VC
029C  121C  GO  021C            030A  3F00  SKIP;VF EQ 00
029E  6E0C  VE=0C               030C  1310  GO  0310
02A0  EEA1  SKIP;VE NE KEY      030E  710A  V1+0A
02A2  1286  GO  0286            0310  0414  MLS@0414
02A4  6E0F  VE=0F               0312  F100
02A6  EEA1  SKIP;VE NE KEY      0314  72FF  V2+FF
02A8  132E  GO  032E            0316  73FF  V3+FF
02AA  2364  DO  0364            0318  70FF  V0+FF
02AC  4EFF  SKIP;VE NE FF       031A  3000  SKIP;V0 EQ 00
02AE  1292  GO  0292            031C  12F2  GO  02F2
02B0  87E0  V7=VE               031E  A41C  I=041C
02B2  A4A1  I=04A1              0320  2354  DO  0354
02B4  0414  MLS@0414            0322  1292  GO  0292
02B6  FE01                      0324  A426  I=0426
02B8  817E                      0326  6401  V4=01
02BA  811E                      0328  1320  GO  0320
02BC  811E                      032A  6400  V4=00
02BE  8174  V1=V1+V7            032C  1208  GO  0208
02C0  8714  V7=V7+V1            032E  2392  DO  0392
02C2  2364  DO  0364            0330  237A  DO  037A
02C4  4EFF  SKIP;VE NE FF       0332  A451  I=0451
02C6  12C2  GO  02C2            0334  4400  SKIP;V4 NE 00
02C8  0414  MLS@0414            0336  A4A3  I=04A3
02CA  FE00                      0338  F265  V0:V2=MI
02CC  87E4  V7=V7+VE            033A  6910  V9=10
02CE  614B  V1=4B               033C  6A19  VA=19
02D0  8175  V1=V1-V7            033E  F029  I=V0(LSDP)
02D2  4F00  SKIP;VF NE 00       0340  D9A5  SHOW 5MI@V9VA
02D4  1292  GO  0292            0342  7906  V9+06
02D6  4700  SKIP;V7 NE 00       0344  F129  I=V1(LSDP)
02D8  1292  GO  0292            0346  D9A5  SHOW 5MI@V9VA
02DA  237A  DO  037A            0348  7906  V9+06
```

```
034A F229  I=V2(LSDP)              03B8 4F00  SKIP;VF NE 00
034C D9A5  SHOW 5MI@V9VA           03BA 13EE  GO 03EE
034E A430  I=0430                  03BC A44C  I=044C
0350 2354  DO 0354                 03BE 6010  V0=10
0352 1208  GO 0208                 03C0 6119  V1=19
0354 6020  V0=20                   03C2 D015  SHOW 5MI@V0V1
0356 6119  V1=19                   03C4 A4A6  I=04A6
0358 D015  SHOW 5MI@V0V1           03C6 F733  MI=V7(3DD)
035A 7008  V0+08                   03C8 A4A7  I=04A7
035C 6B05  VB=05                   03CA 6019  V0=19
035E FB1E  I=I+VB                  03CC 040E  MLS@040E
0360 D015  SHOW 5MI@V0V1           03CE FC00
0362 00EE  RET                     03D0 FC29  I=VC(LSDP)
0364 6E0A  VE=0A                   03D2 D015  SHOW 5MI@V0V1
0366 7EFF  VE+FF                   03D4 A4A8  I=04A8
0368 EEA1  SKIP;VE NE KEY          03D6 7006  V0+06
036A 1372  GO 0372                 03D8 040E  MLS@040E
036C 3E00  SKIP;VE EQ 00           03DA FC00
036E 1366  GO 0366                 03DC FC29  I=VC(LSDP)
0370 1376  GO 0376                 03DE-D015  SHOW 5MI@V0V1
0372 2392  DO 0392                 03E0 00EE  RET
0374 00EE  RET                     03E2 A448  I=0448
0376 6EFF  VE=FF                   03E4 13BE  GO 03BE
0378 00EE  RET                     03E6 A444  I=0444
037A A030  I=0030                  03E8 13BE  GO 03BE
037C 03FF  MLS@03FF                03EA A43F  I=043F
037E 03F3  MLS@03F3                03EC 13BE  GO 03BE
0380 A0CA  I=00CA                  03EE A43A  I=043A
0382 03FF  MLS@03FF                03F0 13BE  GO 03BE
0384 6024  V0=24                   03F2 01F8
0386 0402  MLS@0402                03F4 00AF
0388 0001                          03F6 9ABF
038A 70FF  V0+FF                   03F8 4A5F
038C 3000  SKIP;V0 EQ 00           03FA 1F8A
038E 1386  GO 0386                 03FC 3AF8
0390 00EE  RET                     03FE D49B
0392 6B02  VB=02                   0400 BAD4
0394 FB18  TONE=VB                 0402 455A
0396 EEA1  SKIP;VE NE KEY          0404 E58A
0398 1396  GO 0396                 0406 F4AA
039A 00EE  RET                     0408 159A
039C 613C  V1=3C                   040A 7C00
039E 8175  V1=V1-V7                040C BAD4
03A0 4F00  SKIP;VF NE 00           040E 45A6
03A2 13E2  GO 03E2                 0410 0A56
03A4 612D  V1=2D                   0412 3004
03A6 8175  V1=V1-V7                0414 45A6
03A8 4F00  SKIP;VF NE 00           0416 065A
03AA 13E6  GO 03E6                 0418 3004
03AC 611E  V1=1E                   041A 2AD4
03AE 8175  V1=V1-V7                041C 0302
03B0 4F00  SKIP;VF NE 00           041E 0202
03B2 13EA  GO 03EA                 0420 03C9
03B4 610F  V1=0F                   0422 4A4C
03B6 8175  V1=V1-V7                0424 4AC9
```

0426	0203		043E	E090
0428	0202		0440	D0B6
042A	024F		0442	9090
042C	49C9		0444	F080
042E	494F		0446	B690
0430	0302		0448	F090
0432	0302		044A	9690
0434	02DF		044C	F050
0436	44C4		044E	7650
0438	0404		0450	F000
043A	E040		0452	0000
043C	4640			

4. VIP Blackjack

VIP BLACKJACK (also known as TWENTY-ONE) is a one-or two-player game. The VIP BLACKJACK (one-player) game uses 2048 bytes (minimum system). The SUPER VIP BLACKJACK (two-player) game requires 3072 bytes.

These games follow standard BLACKJACK rules. The VIP computer is the dealer. Both the dealer and players try to get cards that add up to "21". Each number card counts its face value; Ten, Jack, Queen, and King count 10; and Aces count as either one or eleven. A hand containing an Ace that counts as eleven and does not cause the total to exceed 21, is a "soft" hand. All other hands are "hard."

The VIP BLACKJACK dealer draws on soft 17, hard 16, or less. The dealer deals from two standard decks. Before dealing a new hand, if the number of cards in the combined decks is less than 22, the dealer automatically shuffles the cards. Pair splitting and insurance are not allowed. All winning hands pay 1 to 1, except blackjack, which pays 2 to 1.

Players who lose their stakes are dropped from the game. The game ends either when both players have lost their stakes, or when one player breaks 999.

How To Play VIP Blackjack (One-Player)

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.

2. Turn RUN switch on.

3. Select one-player blackjack by pressing key '1'.
   Select two-player blackjack by pressing key '2'.

4. Your stakes will appear at the bottom right corner of your TV screen.

5. Whenever "CUT" appears on the screen, the dealer will shuffle the cards and wait for you to cut. Press key 0 to continue play.

6. Whenever "BET" appears on the screen, you enter your single-digit bet by pressing key 1 through 9, press key 0 to enter a bet of 10. Your bet will be displayed slightly above and to the left of your stakes.

7. After all bets are entered, two cards will be dealt to you and the dealer. The dealer's cards are on the top of the screen. One of the dealer's cards will be face down (hole card).

8. If the dealer has a natural (21) and you do not, you lose your bet. If you also have a natural, you get your bet back, and a "T" for tie appears in the bet position.

9. If the dealer does not have a natural and you do, you get three times your bet back. a "W" for win appears in the bet position.

10. When neither you nor the dealer has a natural, the word "HIT" will appear on your screen. You must either stand, hit, or double down.
   It is your turn when your bet flashes.
   —You Stand (indicating you have enough cards) by pressing key 0.
   —You Hit (Indicating you want another card) by pressing key 1.
      You can draw up to 5 additional cards for a maximum of 7 cards in your hand.
   —You Double Down (indicating you want one more card and double your bet) by pressing key 2. Your bet will change on the screen.
      You keep your turn after Hitting if the card count is 21 or less. You give up your turn after Standing, Doubling Down, or Busting (going over 21).

11. After you have finished your turn, the dealer turns up his hole (down) card. If you are still in the game, the dealer draws cards to his hand whenever it adds up to soft 17, hard 16, or less.

12. If the dealer goes over 21, you win unless you already busted. If you win, a "W" appears in the bet position and you receive twice your bet. If you tie the dealer (push), a "T" appears and you get your bet back. If your hand is less than the dealer's, you lose your bet.

```
0200  A68D  I=068D              026E  A6B2  I=06B2
0202  061E  MLS@061E            0270  F41E  I=I+V4
0204  A6B2  I=06B2              0272  0616  MLS@0616
0206  24AA  DO  04AA            0274  FE00
0208  6A00  VA=00               0276  74FF  V4+FF
020A  24E4  DO  04E4            0278  6100  V1=00
020C  A6BE  I=06BE              027A  4E00  SKIP;VE  NE  00
020E  0610  MLS@0610            027C  6101  V1=01
0210  F100                      027E  061C  MLS@061C
0212  4101  SKIP;V1  NE  01     0280  0616  MLS@0616
0214  25F2  DO  05F2            0282  F100
0216  A6C4  I=06C4              0284  2330  DO  0330
0218  0610  MLS@0610            0286  3F00  SKIP;VF  EQ  00
021A  F701                      0288  1294  GO  0294
021C  4700  SKIP;V7  NE  00     028A  24E4  DO  04E4
021E  1214  GO  0214            028C  24C0  DO  04C0
0220  6600  V6=00               028E  24D6  DO  04D6
0222  6115  V1=15               0290  76FF  V6+FF
0224  A6BF  I=06BF              0292  1256  GO  0256
0226  0610  MLS@0610            0294  2328  DO  0328
0228  F200                      0296  24E4  DO  04E4
022A  8125  V1=V1-V2            0298  1256  GO  0256
022C  4F00  SKIP;VF  NE  00     029A  A0BF  I=00BF
022E  1254  GO  0254            029C  0601  MLS@0601
0230  0604  MLS@0604            029E  05F9  MLS@05F9
0232  6801                      02A0  A69A  I=069A
0234  2588  DO  0588            02A2  0604  MLS@0604
0236  600D  V0=0D               02A4  0008
0238  A68D  I=068D              02A6  0604  MLS@0604
023A  0604  MLS@0604            02A8  0008
023C  0801                      02AA  6602  V6=02
023E  70FF  V0+FF               02AC  6AC0  VA=00
0240  3000  SKIP;V0  EQ  00     02AE  2590  DO  0590
0242  123A  GO  023A            02B0  6A02  VA=02
0244  6E00  VE=00               02B2  2412  DO  0412
0246  EEA1  SKIP;VE  NE  KEY    02B4  4601  SKIP;V6  NE  01
0248  124C  GO  024C            02B6  6100  V1=00
024A  1244  GO  0244            02B8  2592  DO  0592
024C  25E8  DO  05E8            02BA  76FF  V6+FF
024E  A0BF  I=00BF              02BC  3600  SKIP;V6  EQ  00
0250  0601  MLS@0601            02BE  12AC  GO  02AC
0252  05F9  MLS@05F9            02C0  6A00  VA=00
0254  2576  DO  0576            02C2  2466  DO  0466
0256  46FF  SKIP;V6  NE  FF     02C4  8640  V6=V4
0258  129A  GO  029A            02C6  6A02  VA=02
025A  6E0A  VE=0A               02C8  2466  DO  0466
025C  7EFF  VE+FF               02CA  4415  SKIP;V4  NE  15
025E  EEA1  SKIP;VE  NE  KEY    02CC  1310  GO  0310
0260  1268  GO  0268            02CE  6A00  VA=00
0262  3E00  SKIP;VE  EQ  00     02D0  4615  SKIP;V6  NE  15
0264  125C  GO  025C            02D2  23F8  DO  03F8
0266  1256  GO  0256            02D4  4700  SKIP;V7  NE  00
0268  6D02  VD=02               02D6  120C  GO  020C
026A  FD18  TONE=VD             02D8  258C  DO  058C
026C  24BC  DO  04BC            02DA  4700  SKIP;V7  NE  00
```

```
02DC  12E2  GO 02E2              034A  137E  GO 037E
02DE  6A00  VA=00                034C  6E00  VE=00
02E0  233A  DO 033A              034E  EEA1  SKIP;VE NE KEY
02E2  258C  DO 058C              0350  137A  GO 037A
02E4  4700  SKIP;V7 NE 00        0352  FF07  VF=TIME
02E6  120C  GO 020C              0354  3F00  SKIP;VF EQ 00
02E8  FD07  VD=TIME              0356  1340  GO 0340
02EA  3D00  SKIP;VD EQ 00        0358  24D6  DO 04D6
02EC  12E8  GO 02E8              035A  24D6  DO 04D6
02EE  2402  DO 0402              035C  133C  GO 033C
02F0  2466  DO 0466              035E  25E8  DO 05E8
02F2  8640  V6=V4                0360  6601  V6=01
02F4  6210  V2=10                0362  2590  DO 0590
02F6  8265  V2=V2-V6             0364  2466  DO 0466
02F8  4F00  SKIP;VF NE 00        0366  6115  V1=15
02FA  1300  GO 0300              0368  8145  V1=V1-V4
02FC  2590  DO 0590              036A  4F00  SKIP;VF NE 00
02FE  12F0  GO 02F0              036C  13A8  GO 03A8
0300  3411  SKIP;V4 EQ 11        036E  4600  SKIP;V6 NE 00
0302  1308  GO 0308              0370  137C  GO 037C
0304  3300  SKIP;V3 EQ 00        0372  245A  DO 045A
0306  12FC  GO 02FC              0374  4207  SKIP;V2 NE 07
0308  4700  SKIP;V7 NE 00        0376  137C  GO 037C
030A  120C  GO 020C              0378  1352  GO 0352
030C  23CA  DO 03CA              037A  25E8  DO 05E8
030E  120C  GO 020C              037C  00EE  RET
0310  2402  DO 0402              037E  25E8  DO 05E8
0312  4700  SKIP;V7 NE 00        0380  3600  SKIP;V6 EQ 00
0314  120C  GO 020C              0382  1352  GO 0352
0316  6A00  VA=00                0384  2330  DO 0330
0318  4615  SKIP;V6 NE 15        0386  3F00  SKIP;VF EQ 00
031A  1320  GO 0320              0388  13A2  GO 03A2
031C  23A8  DO 03A8              038A  24E4  DO 04E4
031E  120C  GO 020C              038C  24C0  DO 04C0
0320  23B2  DO 03B2              038E  24BC  DO 04BC
0322  120C  GO 020C              0390  8340  V3=V4
0324  23B2  DO 03B2              0392  232C  DO 032C
0326  120C  GO 020C              0394  24D6  DO 04D6
0328  24B8  DO 04B8              0396  6F1E  VF=1E
032A  24BC  DO 04BC              0398  FF15  TIME=VF
032C  6500  V5=00                039A  FF07  VF=TIME
032E  1530  GO 0530              039C  3F00  SKIP;VF EQ 00
0330  24E4  DO 04E4              039E  139A  GO 039A
0332  24B8  DO 04B8              03A0  1362  GO 0362
0334  24BC  DO 04BC              03A2  2328  DO 0328
0336  6501  V5=01                03A4  24E4  DO 04E4
0338  132E  GO 032E              03A6  1352  GO 0352
033A  6600  V6=00                03A8  24C0  DO 04C0
033C  6F0C  VF=0C                03AA  6D2D  VD=2D
033E  FF15  TIME=VF              03AC  FD18  TONE=VD
0340  6E01  VE=01                03AE  FD15  TIME=VD
0342  EEA1  SKIP;VE NE KEY       03B0  13EA  GO 03EA
0344  135E  GO 035E              03B2  24C0  DO 04C0
0346  6E02  VE=02                03B4  A688  I=0688
0348  EEA1  SKIP;VE NE KEY       03B6  23BE  DO 03BE
```

```
03B8  13E8  GO  03E8              0426  F200
03BA  24C0  DO  04C0              0428  4200  SKIP;V2 NE 00
03BC  A683  I=0683                042A  1412  GO  0412
03BE  6B19  VB=19                 042C  72FF  V2+FF
03C0  6926  V9=26                 042E  0616  MLS@0616
03C2  D9B5  SHOW 5MI@V9VB         0430  F200
03C4  24E4  DO  04E4              0432  7101  V1+01
03C6  2328  DO  0328              0434  245A  DO  045A
03C8  00EE  RET                   0436  7201  V2+01
03CA  6A00  VA=00                 0438  0616  MLS@0616
03CC  2466  DO  0466              043A  F200
03CE  6115  V1=15                 043C  8020  V0=V2
03D0  8165  V1=V1-V6              043E  0610  MLS@0610
03D2  4F00  SKIP;VF NE 00         0440  F301
03D4  13E0  GO  03E0              0442  70FF  V0+FF
03D6  9460  SKIP;V4 NE V6         0444  3000  SKIP;V0 EQ 00
03D8  13B2  GO  03B2              0446  143E  GO  043E
03DA  8465  V4=V4-V6              0448  0616  MLS@0616
03DC  4F00  SKIP;VF NE 00         044A  F100
03DE  13A8  GO  03A8              044C  A6BF  I=06BF
03E0  23BA  DO  03BA              044E  0610  MLS@0610
03E2  2328  DO  0328              0450  F300
03E4  3F00  SKIP;VF EQ 00         0452  73FF  V3+FF
03E6  13F0  GO  03F0              0454  0616  MLS@0616
03E8  24E4  DO  04E4              0456  F300
03EA  4A00  SKIP;VA NE 00         0458  00EE  RET
03EC  6700  V7=00                 045A  A6A2  I=06A2
03EE  00EE  RET                   045C  4A02  SKIP;VA NE 02
03F0  A6BE  I=06BE                045E  A69A  I=069A
03F2  0604  MLS@0604              0460  0610  MLS@0610
03F4  0101                        0462  F200
03F6  13EA  GO  03EA              0464  00EE  RET
03F8  23BA  DO  03BA              0466  245A  DO  045A
03FA  2328  DO  0328              0468  0610  MLS@0610
03FC  3F00  SKIP;VF EQ 00         046A  F001
03FE  13F0  GO  03F0              046C  6400  V4=00
0400  13E2  GO  03E2              046E  6C00  VC=00
0402  6A02  VA=02                 0470  6300  V3=00
0404  6100  V1=00                 0472  4000  SKIP;V0 NE 00
0406  6202  V2=02                 0474  14A4  GO  04A4
0408  2592  DO  0592              0476  0610  MLS@0610
040A  A69C  I=069C                0478  F101
040C  0610  MLS@0610              047A  4101  SKIP;V1 NE 01
040E  F100                        047C  7C01  VC+01
0410  1592  GO  0592              047E  620A  V2=0A
0412  C13F  V1=RND               0480  8215  V2=V2-V1
0414  620C  V2=0C                 0482  4F00  SKIP;VF NE 00
0416  8215  V2=V2-V1              0484  14A6  GO  04A6
0418  3F00  SKIP;VF EQ 00         0486  8414  V4=V4+V1
041A  1420  GO  0420              0488  70FF  V0+FF
041C  71F3  V1+F3                 048A  3000  SKIP;V0 EQ 00
041E  1414  GO  0414              048C  1476  GO  0476
0420  A68D  I=068D                048E  4C00  SKIP;VC NE 00
0422  F11E  I=I+V1                0490  14A4  GO  04A4
0424  0610  MLS@0610              0492  740A  V4+0A
```

```
0494 7CFF  VC+FF              0502 FF00
0496 7301  V3+01              0504 00EE  RET
0498 6215  V2=15              0506 6001  V0=01
049A 8245  V2=V2-V4           0508 A6C4  I=06C4
049C 3F00  SKIP;VF EQ 00      050A FA1E  I=I+VA
049E 148E  GO 048E            050C 0616  MLS@0616
04A0 74F6  V4+F6              050E F000
04A2 73FF  V3+FF              0510 24B8  DO 04B8
04A4 00EE  RET                0512 73FE  V3+FE
04A6 740A  V4+0A              0514 6B1B  VB=1B
04A8 1488  GO 0488            0516 6930  V9=30
04AA 0604  MLS@0604           0518 6C03  VC=03
04AC 0201                     051A A6B2  I=06B2
04AE 0604  MLS@0604           051C F31E  I=I+V3
04B0 0001                     051E F065  V0:V0=MI
04B2 0604  MLS@0604           0520 F029  I=V0(LSDP)
04B4 0001                     0522 D9B5  SHOW 5MI@V9VB
04B6 00EE  RET                0524 7301  V3+01
04B8 6302  V3=02              0526 7906  V9+06
04BA 00EE  RET                0528 7CFF  VC+FF
04BC 6408  V4=08              052A 3C00  SKIP;VC EQ 00
04BE 00EE  RET                052C 151A  GO 051A
04C0 A0CC  I=00CC             052E 00EE  RET
04C2 0601  MLS@0601           0530 6F00  VF=00
04C4 6005  V0=05              0532 6003  V0=03
04C6 0604  MLS@0604           0534 A6B2  I=06B2
04C8 0001                     0536 F41E  I=I+V4
04CA 0604  MLS@0604           0538 0610  MLS@0610
04CC 0007                     053A F200
04CE 70FF  V0+FF              053C A6B2  I=06B2
04D0 3000  SKIP;V0 EQ 00      053E F31E  I=I+V3
04D2 14C6  GO 04C6            0540 0610  MLS@0610
04D4 00EE  RET                0542 F100
04D6 24BC  DO 04BC            0544 3500  SKIP;V5 EQ 00
04D8 8340  V3=V4              0546 1566  GO 0566
04DA 73FF  V3+FF              0548 81F4  V1=V1+VF
04DC 6B19  VB=19              054A 8124  V1=V1+V2
04DE 6923  V9=23              054C 620A  V2=0A
04E0 6C02  VC=02              054E 8125  V1=V1-V2
04E2 151A  GO 051A            0550 3F00  SKIP;VF EQ 00
04E4 24B8  DO 04B8            0552 1556  GO 0556
04E6 6003  V0=03              0554 710A  V1+0A
04E8 A6B2  I=06B2             0556 0616  MLS@0616
04EA F31E  I=I+V3             0558 F100
04EC 0610  MLS@0610           055A 74FF  V4+FF
04EE FF00                     055C 73FF  V3+FF
04F0 3F00  SKIP;VF EQ 00      055E 70FF  V0+FF
04F2 1506  GO 0506            0560 3000  SKIP;V0 EQ 00
04F4 73FF  V3+FF              0562 1534  GO 0534
04F6 70FF  V0+FF              0564 00EE  RET
04F8 3000  SKIP;V0 EQ 00      0566 81F5  V1=V1-VF
04FA 14E8  GO 04E8            0568 8125  V1=V1-V2
04FC A6C4  I=06C4             056A 620A  V2=0A
04FE FA1E  I=I+VA             056C 8124  V1=V1+V2
0500 0616  MLS@0616           056E 3F00  SKIP;VF EQ 00
```

```
0570  1556  GO  0556          05DE  FF15  TIME=VF
0572  71F6  V1+F6            05E0  FF07  VF=TIME
0574  1556  GO  0556          05E2  3F00  SKIP;VF EQ 00
0576  A64F  I=064F            05E4  15E0  GO  05E0
0578  6918  V9=18             05E6  00EE  RET
057A  6B09  VB=09             05E8  6B02  VB=02
057C  D9B5  SHOW 5MI@V9VB     05EA  FB18  TONE=VB
057E  7908  V9+08             05EC  EEA1  SKIP;VE NE KEY
0580  6D05  VD=05             05EE  15EC  GO  05EC
0582  FD1E  I=I+VD            05F0  00EE  RET
0584  D9B5  SHOW 5MI@V9VB     05F2  6FFF  VF=FF
0586  00EE  RET               05F4  FF18  TONE=VF
0588  A663  I=0663            05F6  15F6  GO  05F6
058A  1578  GO  0578          05F8  01F8
058C  A659  I=0659            05FA  005A
058E  1578  GO  0578          05FC  2A8A
0590  2412  DO  0412          05FE  3AF9
0592  A63A  I=063A            0600  D49B
0594  4A02  SKIP;VA NE 02     0602  BAD4
0596  A62A  I=062A            0604  455A
0598  8020  V0=V2             0606  E58A
059A  0610  MLS@0610          0608  F4AA
059C  F401                    060A  159A
059E  0610  MLS@0610          060C  7C00
05A0  F501                    060E  BAD4
05A2  70FF  V0+FF             0610  45A6
05A4  3000  SKIP;V0 EQ 00     0612  0A56
05A6  159A  GO  059A          0614  3006
05A8  A648  I=0648            0616  45A6
05AA  D457  SHOW 7MI@V4V5     0618  065A
05AC  4100  SKIP;V1 NE 00     061A  3006
05AE  15D8  GO  05D8          061C  2AD4
05B0  4101  SKIP;V1 NE 01     061E  F839
05B2  15C0  GO  05C0          0620  AFF8
05B4  6309  V3=09             0622  005A
05B6  8315  V3=V3-V1          0624  1A2F
05B8  4F00  SKIP;VF NE 00     0626  8F3A
05BA  15C0  GO  05C0          0628  21D4
05BC  F129  I=V1(LSDP)        062A  1000
05BE  15D2  GO  05D2          062C  1800
05C0  A67A  I=067A            062E  2000
05C2  410A  SKIP;V1 NE 0A     0630  2800
05C4  A66D  I=066D            0632  3000
05C6  410B  SKIP;V1 NE 0B     0634  3800
05C8  A672  I=0672            0636  0800
05CA  410C  SKIP;V1 NE 0C     0638  0000
05CC  A676  I=0676            063A  3911
05CE  410D  SKIP;V1 NE 0D     063C  3210
05D0  A67E  I=067E            063E  2B11
05D2  7401  V4+01             0640  2410
05D4  7501  V5+01             0642  3909
05D6  D455  SHOW 5MI@V4V5     0644  3208
05D8  6D02  VD=02             0646  2B09
05DA  FD18  TONE=VD           0648  FEFE
05DC  6F18  VF=18             064A  FEFE
```

```
064C  FEFE          066E  A8A8
064E  FEFB          0670  A8B8
0650  4A7B          0672  1010
0652  4AFB          0674  1090
0654  DF04          0676  F090
0656  8404          0678  90B0
0658  C493          067A  F090
065A  91F1          067C  F090
065C  9193          067E  90A0
065E  9F04          0680  C0A0
0660  0404          0682  9088
0662  84F4          0684  88A8
0664  8484          0686  D888
0666  84F7          0688  F820
0668  5F44          068A  2020
066A  4444          068C  2003
066C  C4B8
```

5. VIP Slide

Slide is a two-person game. Each player tries to slide a "puck" over the high-scoring "spots" without hitting the back wall.

How To Play VIP Slide

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.

2. Turn RUN switch on.

3. The puck moves up and down randomly. Press "0"-key to stop the puck. The puck will move towards the spots after you release the key. The longer you hold the key down, the further the puck travels (maximum time approximately 2.5 seconds).

4. You get 2 points for hitting the first spot, 4 points for either of the next two spots, and 8 points for either of the last two. The highest score possible is 216 (two spots can be hit on one slide).

5. If you hit the back wall, though, you get zero points for that slide, even though you've hit a spot.

6. Each player gets 3 pucks per turn and 6 turns in a game.

```
0200  00E0  ERASE
0202  A360  I=0360
0204  6800  V8=00
0206  6900  V9=00
0208  6201  V2=01
020A  230E  DO  030E
020C  62FF  V2=FF
020E  230E  DO  030E
0210  6A00  VA=00
0212  6B00  VB=00
0214  6406  V4=06
0216  6C00  VC=00
0218  2328  DO  0328
021A  6C01  VC=01
021C  2328  DO  0328
021E  A359  I=0359
0220  6D28  VD=28
0222  6E12  VE=12
0224  DDE3  SHOW  3MI@VDVE
0226  6D30  VD=30
0228  6E0E  VE=0E
022A  DDE3  SHOW  3MI@VDVE
022C  6E16  VE=16
022E  DDE3  SHOW  3MI@VDVE
0230  6D38  VD=38
0232  6E0A  VE=0A
0234  DDE3  SHOW  3MI@VDVE
0236  6E1A  VE=1A
0238  DDE3  SHOW  3MI@VDVE
023A  6C00  VC=00
023C  6D03  VD=03
023E  2258  DO  0258
0240  6C01  VC=01
0242  6D3B  VD=3B
0244  2258  DO  0258
0246  74FF  V4+FF
0248  3400  SKIP;V4  EQ  00
024A  123A  GO  023A
024C  620F  V2=0F
024E  F218  TONE=V2
0250  6118  V1=18
0252  F115  TIME=V1
0254  1366  GO  0366
0256  1256  GO  0256
0258  6204  V2=04
025A  234C  DO  034C
025C  A357  I=0357
025E  6E03  VE=03
0260  DDE2  SHOW  2MI@VDVE
0262  6503  V5=03
0264  6600  V6=00
0266  6E70  VE=70
0268  A35C  I=035C
026A  6805  V8=05
026C  6909  V9=09
026E  D894  SHOW  4MI@V8V9
0270  6D01  VD=01
0272  6111  V1=11
0274  C218  V2=RND
0276  7208  V2+08
0278  234C  DO  034C
027A  D894  SHOW  4MI@V8V9
027C  89D4  V9=V9+VD
027E  D894  SHOW  4MI@V8V9
0280  71FF  V1+FF
0282  E0A1  SKIP;V0  NE  KEY
0284  1292  GO  0292
0286  3100  SKIP;V1  EQ  00
0288  1274  GO  0274
028A  4DFF  SKIP;VD  NE  FF
028C  1270  GO  0270
028E  6DFF  VD=FF
0290  1272  GO  0272
0292  6202  V2=02
0294  F218  TONE=V2
0296  6210  V2=10
0298  234C  DO  034C
029A  3E00  SKIP;VE  EQ  00
029C  7EFE  VE+FE
029E  E0A1  SKIP;V0  NE  KEY
02A0  1296  GO  0296
02A2  6210  V2=10
02A4  234C  DO  034C
02A6  E0A1  SKIP;V0  NE  KEY
```

```
02A8  1296  GO  0296            0316  3100  SKIP;V1 EQ 00
02AA  6204  V2=04               0318  1310  GO  0310
02AC  234C  DO  034C            031A  611F  V1=1F
02AE  83E0  V3=VE               031C  D891  SHOW 1MI@V8V9
02B0  83E4  V3=V3+VE            031E  71FF  V1+FF
02B2  8230  V2=V3               0320  8924  V9=V9+V2
02B4  234C  DO  034C            0322  3100  SKIP;V1 EQ 00
02B6  7E02  VE+02               0324  131C  GO  031C
02B8  D894  SHOW 4MI@V8V9       0326  00EE  RET
02BA  7801  V8+01               0328  A361  I=0361
02BC  D894  SHOW 4MI@V8V9       032A  6E02  VE=02
02BE  4F01  SKIP;VF NE 01       032C  6D08  VD=08
02C0  12F8  GO  02F8            032E  FA33  MI=VA(3DD)
02C2  3E70  SKIP;VE EQ 70       0330  4C00  SKIP;VC NE 00
02C4  12AE  GO  02AE            0332  1338  GO  0338
02C6  6280  V2=80               0334  6D28  VD=28
02C8  237A  DO  037A            0336  FB33  MI=VB(3DD)
02CA  2328  DO  0328            0338  F265  V0:V2=MI
02CC  3C00  SKIP;VC EQ 00       033A  F029  I=V0(LSDP)
02CE  12D4  GO  02D4            033C  DDE5  SHOW 5MI@VDVE
02D0  8A64  VA=VA+V6            033E  7D06  VD+06
02D2  12D6  GO  02D6            0340  F129  I=V1(LSDP)
02D4  8B64  VB=VB+V6            0342  DDE5  SHOW 5MI@VDVE
02D6  2328  DO  0328            0344  7D06  VD+06
02D8  A35C  I=035C              0346  F229  I=V2(LSDP)
02DA  D894  SHOW 4MI@V8V9       0348  DDE5  SHOW 5MI@VDVE
02DC  6220  V2=20               034A  00EE  RET
02DE  F218  TONE=V2             034C  7202  V2+02
02E0  75FF  V5+FF               034E  72FF  V2+FF
02E2  3500  SKIP;V5 EQ 00       0350  3200  SKIP;V2 EQ 00
02E4  1264  GO  0264            0352  134E  GO  034E
02E6  A357  I=0357              0354  00EE  RET
02E8  6E03  VE=03               0356  01C0
02EA  6D03  VD=03               0358  C0E0
02EC  3C00  SKIP;VC EQ 00       035A  A0E0
02EE  6D3B  VD=3B               035C  F0F0
02F0  DDE2  SHOW 2MI@VDVE       035E  F0F0
02F2  6204  V2=04               0360  8000
02F4  234C  DO  034C            0362  0004
02F6  00EE  RET                 0364  00D4
02F8  6202  V2=02               0366  F107  V1=TIME
02FA  F218  TONE=V2             0368  3100  SKIP;V1 EQ 00
02FC  483C  SKIP;V8 NE 3C       036A  1366  GO  0366
02FE  12D8  GO  02D8            036C  72FF  V2+FF
0300  4825  SKIP;V8 NE 25       036E  3200  SKIP;V2 EQ 00
0302  7602  V6+02               0370  124E  GO  024E
0304  482D  SKIP;V8 NE 2D       0372  1372  GO  0372
0306  7604  V6+04               0374  3E70  SKIP;VE EQ 70
0308  4835  SKIP;V8 NE 35       0376  12AE  GO  02AE
030A  7608  V6+08               0378  12C6  GO  02C6
030C  1374  GO  0374            037A  F215  TIME=V2
030E  613F  V1=3F               037C  F207  V2=TIME
0310  D891  SHOW 1MI@V8V9       037E  3200  SKIP;V2 EQ 00
0312  71FF  V1+FF               0380  137C  GO  037C
0314  8824  V8=V8+V2            0382  00EE  RET
```

6. VIP Reversi

REVERSI is a game over 100 years old, which has become popular recently under the name OTHELLO. The game is played on an 8×8 square, using two kinds of markers. In VIP REVERSI one player has the open markers and the other player the solid markers. The score for either player at any time is the total number of his markers on the square.

How To Play VIP Reversi

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.

2. Turn RUN switch on.

3. The 8×8 square will be formed and the starting marker configuration shown, having two of each kind of marker in the center four locations of the square. The starting score for each player is shown as 02 above a line of his markers.

4. Your VIP indicates the player's turn by blinking that player's score and also blinking a cursor-dot in the 8×8 square. A player moves the blinking cursor-dot in the 8×8 square by pressing the direction keys 1-4 and 6-9 as shown.

5. When the cursor-dot is properly located, the player presses key 5 to place his marker on the square. You will find that your VIP will not allow you to make a non-valid play. The only placements allowed are ones for which at least one of the other player's markers is surrounded between an existing marker of your own and your new marker being placed. All these markers must be in consecutive positions on the square and can be in any horizontal, vertical, or diagonal direction. Once a new marker has been placed, your VIP will change all such surrounded markers of the other player to your kind and change the scores.
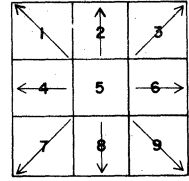
6. Sometimes it may not be possible for a player to make a valid move. If this happens he must forfeit his move by pressing the "F" key! The game ends when neither player can play or when the 8×8 square is completely filled with markers. The goal is to end the game with the highest score. Do not be discouraged if during the game you seem to be losing because this is a game with dramatic reversals! Develop a winning strategem and become a champion!!

```
0200  6D02  VD=02
0202  6E02  VE=02
0204  6C00  VC=00
0206  A2D7  I=02D7
0208  6B00  VB=00
020A  6A11  VA=11
020C  DAB3  SHOW 3MI@VAVB
020E  3A2D  SKIP;VA EQ 2D
0210  121A  GO 021A
0212  4B1C  SKIP;VB NE 1C
0214  121E  GO 021E
0216  7B04  VB+04
0218  120A  GO 020A
021A  7A04  VA+04
021C  120C  GO 020C
021E  6A1D  VA=1D
0220  6B0C  VB=0C
0222  DAB3  SHOW 3MI@VAVB
0224  7A04  VA+04
0226  7B04  VB+04
0228  DAB3  SHOW 3MI@VAVB
022A  A2DA  I=02DA
022C  DAB3  SHOW 3MI@VAVB
022E  7AFC  VA+FC
0230  DAB3  SHOW 3MI@VAVB
0232  7BFC  VB+FC
0234  DAB3  SHOW 3MI@VAVB
0236  7A04  VA+04
0238  DAB3  SHOW 3MI@VAVB
023A  6002  V0=02
023C  22DE  DO 02DE
```

```
023E  6034  V0=34
0240  22DE  DO 02DE
0242  A2D7  I=02D7
0244  6034  V0=34
0246  22DE  DO 02DE
0248  2394  DO 0394
024A  6901  V9=01
024C  230C  DO 030C
024E  6800  V8=00
0250  237E  DO 037E
0252  6900  V9=00
0254  4909  SKIP;V9 NE 09
0256  1272  GO 0272
0258  7901  V9+01
025A  E99E  SKIP;V9 EQ KEY
025C  1254  GO 0254
025E  4905  SKIP;V9 NE 05
0260  128C  GO 028C
0262  3800  SKIP;V8 EQ 00
0264  239E  DO 039E
0266  230C  DO 030C
0268  3800  SKIP;V8 EQ 00
026A  239E  DO 039E
026C  6102  V1=02
026E  F118  TONE=V1
0270  1250  GO 0250
0272  690F  V9=0F
0274  E99E  SKIP;V9 EQ KEY
0276  1250  GO 0250
0278  3800  SKIP;V8 EQ 00
027A  22EC  DO 02EC
```

```
027C  7C80  VC+80                    02EE  3C00  SKIP;VC EQ 00
027E  3800  SKIP;V8 EQ 00            02F0  1306  GO 0306
0280  22EC  DO 02EC                  02F2  6502  V5=02
0282  6118  V1=18                    02F4  FD33  MI=VD(3DD)
0284  F118  TONE=V1                  02F6  6604  V6=04
0286  E9A1  SKIP;V9 NE KEY           02F8  F265  V0:V2=MI
0288  1286  GO 0286                  02FA  F129  I=V1(LSDP)
028A  1250  GO 0250                  02FC  D565  SHOW 5MI@V5V6
028C  3800  SKIP;V8 EQ 00            02FE  7507  V5+07
028E  237E  DO 037E                  0300  F229  I=V2(LSDP)
0290  23A8  DO 03A8                  0302  D565  SHOW 5MI@V5V6
0292  3100  SKIP;V1 EQ 00            0304  00EE  RET
0294  1250  GO 0250                  0306  6534  V5=34
0296  83A0  V3=VA                    0308  FE33  MI=VE(3DD)
0298  84B0  V4=VB                    030A  12F6  GO 02F6
029A  6900  V9=00                    030C  6700  V7=00
029C  23D0  DO 03D0                  030E  4909  SKIP;V9 NE 09
029E  4200  SKIP;V2 NE 00            0310  1372  GO 0372
02A0  1250  GO 0250                  0312  4908  SKIP;V9 NE 08
02A2  2394  DO 0394                  0314  135E  GO 035E
02A4  A2DA  I=02DA                   0316  4907  SKIP;V9 NE 07
02A6  D343  SHOW 3MI@V3V4            0318  1366  GO 0366
02A8  3C00  SKIP;VC EQ 00            031A  4906  SKIP;V9 NE 06
02AA  12B0  GO 02B0                  031C  1356  GO 0356
02AC  A2D7  I=02D7                   031E  4904  SKIP;V9 NE 04
02AE  D343  SHOW 3MI@V3V4            0320  134E  GO 034E
02B0  3C00  SKIP;VC EQ 00            0322  4903  SKIP;V9 NE 03
02B2  12B8  GO 02B8                  0324  1342  GO 0342
02B4  7D01  VD+01                    0326  4901  SKIP;V9 NE 01
02B6  12BA  GO 02BA                  0328  1336  GO 0336
02B8  7E01  VE+01                    032A  4B00  SKIP;VB NE 00
02BA  23FA  DO 03FA                  032C  1332  GO 0332
02BC  23D0  DO 03D0                  032E  7BFC  VB+FC
02BE  3200  SKIP;V2 EQ 00            0330  00EE  RET
02C0  12BA  GO 02BA                  0332  67FF  V7=FF
02C2  2394  DO 0394                  0334  00EE  RET
02C4  81D0  V1=VD                    0336  4B00  SKIP;VB NE 00
02C6  81E4  V1=V1+VE                 0338  1332  GO 0332
02C8  3140  SKIP;V1 EQ 40            033A  4A11  SKIP;VA NE 11
02CA  1278  GO 0278                  033C  1332  GO 0332
02CC  242E  DO 042E                  033E  7AFC  VA+FC
02CE  242E  DO 042E                  0340  132E  GO 032E
02D0  2388  DO 0388                  0342  4B00  SKIP;VB NE 00
02D2  242E  DO 042E                  0344  1332  GO 0332
02D4  12CC  GO 02CC                  0346  4A2D  SKIP;VA NE 2D
02D6  0100                           0348  1332  GO 0332
02D8  4000                           034A  7A04  VA+04
02DA  E0A0                           034C  132E  GO 032E
02DC  E0D4                           034E  4A11  SKIP;VA NE 11
02DE  610B  V1=0B                    0350  1332  GO 0332
02E0  D013  SHOW 3MI@V0V1            0352  7AFC  VA+FC
02E2  7004  VC+04                    0354  00EE  RET
02E4  D013  SHOW 3MI@V0V1            0356  4A2D  SKIP;VA NE 2D
02E6  7004  V0+04                    0358  1332  GO 0332
02E8  D013  SHOW 3MI@V0V1            035A  7A04  VA+04
02EA  00EE  RET                      035C  00EE  RET
02EC  A440  I=0440                   035E  4B1C  SKIP;VB NE 1C
```

```
0360  1332  GO 0332
0362  7B04  VB+04
0364  00EE  RET
0366  4B1C  SKIP;VB NE 1C
0368  1332  GO 0332
036A  4A11  SKIP;VA NE 11
036C  1332  GO 0332
036E  7AFC  VA+FC
0370  1362  GO 0362
0372  4B1C  SKIP;VB NE 1C
0374  1332  GO 0332
0376  4A2D  SKIP;VA NE 2D
0378  1332  GO 0332
037A  7A04  VA+04
037C  1362  GO 0362
037E  2388  DO 0388
0380  22EC  DO 02EC
0382  239E  DO 039E
0384  7880  V8+80
0386  00EE  RET
0388  6110  V1=10
038A  F115  TIME=V1
038C  F107  V1=TIME
038E  3100  SKIP;V1 EQ 00
0390  138C  GO 038C
0392  00EE  RET
0394  22EC  DO 02EC
0396  7C80  VC+80
0398  22EC  DO 02EC
039A  7C80  VC+80
039C  00EE  RET
039E  A2D7  I=02D7
03A0  DAB3  SHOW 3MI@VAVB
03A2  00EE  RET
03A4  A2DA  I=02DA
03A6  13A0  GO 03A0
03A8  23A4  DO 03A4
03AA  81F0  V1=VF
03AC  23A4  DO 03A4
03AE  4100  SKIP;V1 NE 00
03B0  13CC  GO 03CC
03B2  239E  DO 039E
03B4  81F0  V1=VF
03B6  239E  DO 039E
03B8  3100  SKIP;V1 EQ 00
03BA  13C4  GO 03C4
03BC  3C00  SKIP;VC EQ 00
03BE  13C8  GO 03C8
03C0  6180  V1=80
03C2  00EE  RET
03C4  3C00  SKIP;VC EQ 00
03C6  13C0  GO 03C0
03C8  61FF  V1=FF
03CA  00EE  RET
03CC  6100  V1=00
03CE  00EE  RET
```

```
03D0  8A30  VA=V3
03D2  8B40  VB=V4
03D4  7901  V9+01
03D6  4905  SKIP;V9 NE 05
03D8  7901  V9+01
03DA  6200  V2=00
03DC  490A  SKIP;V9 NE 0A
03DE  00EE  RET
03E0  230C  DO 030C
03E2  23A8  DO 03A8
03E4  4100  SKIP;V1 NE 00
03E6  13D0  GO 03D0
03E8  3180  SKIP;V1 EQ 80
03EA  13F2  GO 03F2
03EC  3200  SKIP;V2 EQ 00
03EE  00EE  RET
03F0  13D0  GO 03D0
03F2  47FF  SKIP;V7 NE FF
03F4  13D0  GO 03D0
03F6  7201  V2+01
03F8  13E0  GO 03E0
03FA  8190  V1=V9
03FC  690A  V9=0A
03FE  8915  V9=V9-V1
0400  230C  DO 030C
0402  81A0  V1=VA
0404  8135  V1=V1-V3
0406  3100  SKIP;V1 EQ 00
0408  141A  GO 041A
040A  81B0  V1=VB
040C  8145  V1=V1-V4
040E  3100  SKIP;V1 EQ 00
0410  141A  GO 041A
0412  8190  V1=V9
0414  690A  V9=0A
0416  8915  V9=V9-V1
0418  00EE  RET
041A  239E  DO 039E
041C  3C00  SKIP;VC EQ 00
041E  1426  GO 0426
0420  7D01  VD+01
0422  7EFF  VE+FF
0424  142A  GO 042A
0426  7DFF  VD+FF
0428  7E01  VE+01
042A  242E  DO 042E
042C  1400  GO 0400
042E  6104  V1=04
0430  F118  TONE=V1
0432  2388  DO 0388
0434  00EE  RET
0436  1424  GO 0424
0438  4A2D  SKIP;VA NE 2D
043A  1424  GO 0424
043C  7A04  VA+04
043E  1420  GO 0420
```

7. VIP Bowling

Bowling is a great game for recreation and competition requiring skill and a little bit of luck. This program simulates bowling closely with regular scoring and the option of using three different spins on the ball.

How To Play VIP Bowling

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.

2. Turn RUN switch on.

3. Up to 6 persons can compete. Make the choice by pressing KEY 1, 2, 3, 4, 5, or 6. The players will be referred to as A, B, C, D, E, and F.

4. It is possible to play up to 10 frames in one game. Make your choice of the number of frames by pressing KEY 1, 2, 3, 5, 6, 7, 8, 9, or 0 (for 10 frames).

5. It is possible to choose 3 ball speeds (KEY 1, 2, or 3). The speed option only affects the ball after it is released.

6. At the start of a player's turn, the video will display whose turn it is and whether he is working on a spare, strike, 2 strikes, or nothing.

Release the ball by pressing one of the following keys: KEY 1, 2, 3, 5, 7, 8, or 9.

—KEY 5 will cause a straight ball.
—KEY 1, 2, and 3 will cause the ball to spin up—KEY 1 before the first pin, KEY 2 after the first pin, and KEY 3 after the second pin.
—KEY 7, 8, and 9 will cause the ball to spin down—KEY 7 before the first pin, KEY 8 after the first pin, KEY 9 after the second pin.

7. After the player's turn ends, the video will display whose turn it was, the frame, and the score. The next player follows the instructions at 6 above.

8. After all players have had their turn in a frame, the video will display the total of each player and whether he is working on a spare, 1 strike, 2 strikes, or nothing. It will display the frame number and the total number of frames to go (unless the last frame was played).

After pressing any key, player A can start in the next frame. Continue with instruction 6 above.

9. If all frames in the game have been finished, press any key again. The players who are still working on a spare will receive 1 more ball, and those working on 1 or 2 strikes will receive 2 balls.

10. After all players have finished the game the final score will be displayed.

```
0200  6314  V3=14
0202  6400  V4=00
0204  255E  DO  055E
0206  6005  V0=05
0208  25B4  DO  05B4
020A  630C  V3=0C
020C  25BC  DO  05BC
020E  6906  V9=06
0210  89B5  V9=V9-VB
0212  3B00  SKIP;VB  EQ  00
0214  4F00  SKIP;VF  NE  00
0216  120C  GO  020C
0218  FB29  I=VB(LSDP)
021A  D345  SHOW  5MV3V4
021C  8DB0  VD=VB
021E  7D09  VD+09
0220  6314  V3=14
0222  640C  V4=0C
0224  257A  DO  057A
0226  6005  V0=05
0228  25B4  DO  05B4
022A  630C  V3=0C
022C  25BC  DO  05BC
022E  6909  V9=09
0230  89B5  V9=V9-VB
0232  4F00  SKIP;VF  NE  00
0234  122C  GO  022C
0236  FB29  I=VB(LSDP)
```

```
0238  D345  SHOW  5MV3V4
023A  3B00  SKIP;VB  EQ  00
023C  1246  GO  0246
023E  6B0A  VB=0A
0240  6307  V3=07
0242  6001  V0=01
0244  25B4  DO  05B4
0246  80B0  V0=VB
0248  A6A6  I=06A6
024A  F055  MI=V0:V0
024C  6E00  VE=00
024E  6314  V3=14
0250  6418  V4=18
0252  6005  V0=05
0254  25B4  DO  05B4
0256  A64A  I=064A
0258  25B6  DO  05B6
025A  600E  V0=0E
025C  25B4  DO  05B4
025E  25B4  DO  05B4
0260  600D  V0=0D
0262  25B4  DO  05B4
0264  630C  V3=0C
0266  25BC  DO  05BC
0268  6903  V9=03
026A  89B5  V9=V9-VB
026C  3B00  SKIP;VB  EQ  00
```

```
026E 4F00  SKIP;VF NE 00        02DC 25B4  DO  05B4
0270 1266  GO  0266             02DE 12F4  GO  02F4
0272 FB29  I=VB(LSDP)           02E0 633A  V3=3A
0274 D345  SHOW 5MV3V4          02E2 6402  V4=02
0276 6000  V0=00                02E4 FB29  I=VB(LSDP)
0278 4B02  SKIP;VB NE 02        02E6 D345  SHOW 5MV3V4
027A 6004  V0=04                02E8 12D4  GO  02D4
027C 4B01  SKIP;VB NE 01        02EA 4000  SKIP;V0 NE 00
027E 6008  V0=08                02EC 12E0  GO  02E0
0280 A4A9  I=04A9               02EE 6331  V3=31
0282 F055  MI=V0:V0             02F0 A675  I=0675
0284 25DE  DO  05DE             02F2 D347  SHOW 7MV3V4
0286 A694  I=0694               02F4 25DE  DO  05DE
0288 6000  V0=00                02F6 9CD0  SKIP;VC NE VD
028A 6100  V1=00                02F8 12FE  GO  02FE
028C F055  MI=V0:V0             02FA 7C01  VC+01
028E 7101  V1+01                02FC 1298  GO  0298
0290 3112  SKIP;V1 EQ 12        02FE 00E0  ERASE
0292 128C  GO  028C             0300 6300  V3=00
0294 6C0A  VC=0A                0302 6400  V4=00
0296 7E01  VE+01                0304 257A  DO  057A
0298 2608  DO  0608             0306 25C6  DO  05C6
029A 6A00  VA=00                0308 80E0  V0=VE
029C 2376  DO  0376             030A 300E  SKIP;V0 EQ 0E
029E 6300  V3=00                030C 1312  GO  0312
02A0 6410  V4=10                030E 25B4  DO  05B4
02A2 255E  DO  055E             0310 1314  GO  0314
02A4 25C6  DO  05C6             0312 2596  DO  0596
02A6 80C0  V0=VC                0314 6C0A  VC=0A
02A8 25B4  DO  05B4             0316 6300  V3=00
02AA 6302  V3=02                0318 7409  V4+09
02AC 641B  V4=1B                031A 80C0  V0=VC
02AE 257A  DO  057A             031C 25B4  DO  05B4
02B0 25C6  DO  05C6             031E 25C6  DO  05C6
02B2 80E0  V0=VE                0320 A68A  I=068A
02B4 2596  DO  0596             0322 FC1E  I=I+VC
02B6 6330  V3=30                0324 F065  V0:V0=MI
02B8 6400  V4=00                0326 8500  V5=V0
02BA A67C  I=067C               0328 A690  I=0690
02BC D349  SHOW 9MV3V4          032A FC1E  I=I+VC
02BE 7308  V3+08                032C F065  V0:V0=MI
02C0 D349  SHOW 9MV3V4          032E 2598  DO  0598
02C2 A696  I=0696               0330 25F4  DO  05F4
02C4 FC1E  I=I+VC               0332 9CD0  SKIP;VC NE VD
02C6 F065  V0:V0=MI             0334 1344  GO  0344
02C8 6401  V4=01                0336 7C01  VC+01
02CA 3001  SKIP;V0 EQ 01        0338 6924  V9=24
02CC 12EA  GO  02EA             033A 8935  V9=V9-V3
02CE 6339  V3=39                033C 3F01  SKIP;VF EQ 01
02D0 A66F  I=066F               033E 1316  GO  0316
02D2 D347  SHOW 7MV3V4          0340 6325  V3=25
02D4 A6A7  I=06A7               0342 131A  GO  031A
02D6 F065  V0:V0=MI             0344 6337  V3=37
02D8 6332  V3=32                0346 6400  V4=00
02DA 6402  V4=02                0348 4E0E  SKIP;VE NE 0E
```

```
034A  134A  GO  034A              03B8  2590  DO  0590
034C  A6A6  I=06A6              03BA  2590  DO  0590
034E  F065  V0:V0=MI            03BC  2590  DO  0590
0350  9E00  SKIP;VE NE V0       03BE  D124  SHOW 4MV1V2
0352  135A  GO  035A              03C0  6B00  VB=00
0354  2596  DO  0596              03C2  A642  I=0642
0356  F90A  V9=KEY              03C4  6101  V1=01
0358  1294  GO  0294              03C6  620E  V2=0E
035A  F90A  V9=KEY              03C8  631A  V3=1A
035C  6E0E  VE=0E              03CA  6401  V4=01
035E  6C0A  VC=0A              03CC  D125  SHOW 5MV1V2
0360  2608  DO  0608              03CE  6822  V8=22
0362  4000  SKIP;V0 NE 00       03D0  6902  V9=02
0364  136E  GO  036E              03D2  6501  V5=01
0366  6A00  VA=00              03D4  E5A1  SKIP;V5 NE KEY
0368  4001  SKIP;V0 NE 01       03D6  1410  GO  0410
036A  6A01  VA=01              03D8  6502  V5=02
036C  2376  DO  0376              03DA  E5A1  SKIP;V5 NE KEY
036E  9CD0  SKIP;VC NE VD       03DC  1414  GO  0414
0370  12FE  GO  02FE              03DE  6503  V5=03
0372  7C01  VC+01              03E0  E5A1  SKIP;V5 NE KEY
0374  1360  GO  0360              03E2  1418  GO  0418
0376  25DE  DO  05DE              03E4  6505  V5=05
0378  00E0  ERASE              03E6  E5A1  SKIP;V5 NE KEY
037A  A684  I=0684              03E8  141C  GO  041C
037C  6200  V2=00              03EA  6507  V5=07
037E  6100  V1=00              03EC  E5A1  SKIP;V5 NE KEY
0380  D121  SHOW 1MV1V2         03EE  1422  GO  0422
0382  7108  V1+08              03F0  6508  V5=08
0384  3140  SKIP;V1 EQ 40       03F2  E5A1  SKIP;V5 NE KEY
0386  1380  GO  0380              03F4  1420  GO  0420
0388  721F  V2+1F              03F6  6509  V5=09
038A  421F  SKIP;V2 NE 1F       03F8  E5A1  SKIP;V5 NE KEY
038C  137E  GO  037E              03FA  141E  GO  041E
038E  A685  I=0685              03FC  D125  SHOW 5MV1V2
0390  6100  V1=00              03FE  9230  SKIP;V2 NE V3
0392  6201  V2=01              0400  1406  GO  0406
0394  D12F  SHOW FMV1V2         0402  8244  V2=V2+V4
0396  6210  V2=10              0404  13CC  GO  03CC
0398  D12F  SHOW FMV1V2         0406  3401  SKIP;V4 EQ 01
039A  A647  I=0647              0408  13C8  GO  03C8
039C  6127  V1=27              040A  6301  V3=01
039E  620E  V2=0E              040C  64FF  V4=FF
03A0  D124  SHOW 4MV1V2         040E  13CC  GO  03CC
03A2  612D  V1=2D              0410  79FC  V9+FC
03A4  620A  V2=0A              0412  1422  GO  0422
03A6  2590  DO  0590              0414  79FC  V9+FC
03A8  D124  SHOW 4MV1V2         0416  1420  GO  0420
03AA  6133  V1=33              0418  79FC  V9+FC
03AC  6206  V2=06              041A  141E  GO  041E
03AE  2590  DO  0590              041C  79FE  V9+FE
03B0  2590  DO  0590              041E  7809  V8+09
03B2  D124  SHOW 4MV1V2         0420  7809  V8+09
03B4  6139  V1=39              0422  25EE  DO  05EE
03B6  6202  V2=02              0424  248E  DO  048E
```

```
0426  A690  I=0690          0494  14AE  GO  04AE
0428  FC1E  I=I+VC          0496  D125  SHOW 5MV1V2
042A  F065  V0:V0=MI        0498  5180  SKIP;V1 EQ V8
042C  8800  V8=V0           049A  149E  GO  049E
042E  A696  I=0696          049C  8390  V3=V9
0430  FC1E  I=I+VC          049E  7103  V1+03
0432  F065  V0:V0=MI        04A0  8234  V2=V2+V3
0434  8900  V9=V0           04A2  413D  SKIP;V1 NE 3D
0436  3A00  SKIP;VA EQ 00   04A4  00EE  RET
0438  1466  GO  0466        04A6  D125  SHOW 5MV1V2
043A  4903  SKIP;V9 NE 03   04A8  6000  V0=00
043C  1458  GO  0458        04AA  25E0  DO  05E0
043E  3900  SKIP;V9 EQ 00   04AC  1492  GO  0492
0440  145C  GO  045C        04AE  D125  SHOW 5MV1V2
0442  2626  DO  0626        04B0  6627  V6=27
0444  4B0A  SKIP;VB NE 0A   04B2  6702  V7=02
0446  1484  GO  0484        04B4  642A  V4=2A
0448  2614  DO  0614        04B6  8415  V4=V4-V1
044A  A6A7  I=06A7          04B8  3F00  SKIP;VF EQ 00
044C  80B0  V0=VB           04BA  14F8  GO  04F8
044E  F055  MI=V0:V0        04BC  6430  V4=30
0450  7A01  VA+01           04BE  8415  V4=V4-V1
0452  3B0A  SKIP;VB EQ 0A   04C0  3F00  SKIP;VF EQ 00
0454  13C0  GO  03C0        04C2  14CE  GO  04CE
0456  139A  GO  039A        04C4  6436  V4=36
0458  2626  DO  0626        04C6  8415  V4=V4-V1
045A  79FF  V9+FF           04C8  3F00  SKIP;VF EQ 00
045C  2626  DO  0626        04CA  14F6  GO  04F6
045E  79FF  V9+FF           04CC  760C  V6+0C
0460  3E0E  SKIP;VE EQ 0E   04CE  7606  V6+06
0462  1442  GO  0442        04D0  4200  SKIP;V2 NE 00
0464  1448  GO  0448        04D2  1514  GO  0514
0466  4901  SKIP;V9 NE 01   04D4  6405  V4=05
0468  147A  GO  047A        04D6  8425  V4=V4-V2
046A  2626  DO  0626        04D8  3F00  SKIP;VF EQ 00
046C  A6A7  I=06A7          04DA  1522  GO  0522
046E  F065  V0:V0=MI        04DC  640D  V4=0D
0470  80B4  V0=V0+VB        04DE  8425  V4=V4-V2
0472  400A  SKIP;V0 NE 0A   04E0  3F00  SKIP;VF EQ 00
0474  1486  GO  0486        04E2  151E  GO  051E
0476  25DE  DO  05DE        04E4  6415  V4=15
0478  1488  GO  0488        04E6  8425  V4=V4-V2
047A  2626  DO  0626        04E8  3F00  SKIP;VF EQ 00
047C  79FF  V9+FF           04EA  151A  GO  051A
047E  3E0E  SKIP;VE EQ 0E   04EC  641A  V4=1A
0480  146A  GO  046A        04EE  8425  V4=V4-V2
0482  1476  GO  0476        04F0  3F00  SKIP;VF EQ 00
0484  7901  V9+01           04F2  1516  GO  0516
0486  7901  V9+01           04F4  1514  GO  0514
0488  2614  DO  0614        04F6  760C  V6+0C
048A  00E0  ERASE           04F8  4200  SKIP;V2 NE 00
048C  00EE  RET             04FA  1514  GO  0514
048E  6300  V3=00           04FC  6409  V4=09
0490  6F00  VF=00           04FE  8425  V4=V4-V2
0492  3F00  SKIP;VF EQ 00   0500  3F00  SKIP;VF EQ 00
```

```
0502 1520 GO  0520
0504 6411 V4=11
0506 8425 V4=V4-V2
0508 3F00 SKIP;VF EQ 00
050A 151C GO  051C
050C 6419 V4=19
050E 8425 V4=V4-V2
0510 3F00 SKIP;VF EQ 00
0512 1518 GO  0518
0514 15EE GO  05EE
0516 7704 V7+04
0518 7704 V7+04
051A 7704 V7+04
051C 7704 V7+04
051E 7704 V7+04
0520 7704 V7+04
0522 A647 I=0647
0524 D674 SHOW 4MV6V7
0526 3F00 SKIP;VF EQ 00
0528 1530 GO  0530
052A D674 SHOW 4MV6V7
052C A642 I=0642
052E 1498 GO  0498
0530 7B01 VB+01
0532 25EA DO  05EA
0534 C007 V0=RND
0536 8004 V0=V0+V0
0538 B53A GO  053A+V0
053A 1550 GO  0550
053C 154E GO  054E
053E 154A GO  054A
0540 1548 GO  0548
0542 1550 GO  0550
0544 154E GO  054E
0546 154A GO  054A
0548 7710 V7+10
054A 77F8 V7+F8
054C 1554 GO  0554
054E 7708 V7+08
0550 77FC V7+FC
0552 7606 V6+06
0554 641B V4=1B
0556 8475 V4=V4-V7
0558 3F00 SKIP;VF EQ 00
055A 1522 GO  0522
055C 152C GO  052C
055E A64A I=064A
0560 25B6 DO  05B6
0562 A64D I=064D
0564 D345 SHOW 5MV3V4
0566 7304 V3+04
0568 600A V0=0A
056A 25B4 DO  05B4
056C A652 I=0652
056E D345 SHOW 5MV3V4
```

```
0570 7304 V3+04
0572 600E V0=0E
0574 25B4 DO  05B4
0576 A65A I=065A
0578 15B6 GO  05B6
057A 600F V0=0F
057C 25B4 DO  05B4
057E A65A I=065A
0580 25B6 DO  05B6
0582 600A V0=0A
0584 25B4 DO  05B4
0586 A65F I=065F
0588 D345 SHOW 5MV3V4
058A 7306 V3+06
058C 600E V0=0E
058E 15B4 GO  05B4
0590 D124 SHOW 4MV1V2
0592 7208 V2+08
0594 00EE RET
0596 6500 V5=00
0598 A6A8 I=06A8
059A F033 MI=V0(3DD)
059C F265 V0:V2=MI
059E 8050 V0=V5
05A0 3000 SKIP;V0 EQ 00
05A2 15AA GO  05AA
05A4 3100 SKIP;V1 EQ 00
05A6 15AC GO  05AC
05A8 15B0 GO  05B0
05AA 25B4 DO  05B4
05AC 8010 V0=V1
05AE 25B4 DO  05B4
05B0 8020 V0=V2
05B2 15B4 GO  05B4
05B4 F029 I=V0(LSDP)
05B6 D345 SHOW 5MV3V4
05B8 7305 V3+05
05BA 00EE RET
05BC A664 I=0664
05BE D347 SHOW 7MV3V4
05C0 FB0A VB=KEY
05C2 D347 SHOW 7MV3V4
05C4 00EE RET
05C6 A66B I=066B
05C8 D344 SHOW 4MV3V4
05CA 7302 V3+02
05CC 00EE RET
05CE A656 I=0656
05D0 D342 SHOW 2MV3V4
05D2 7303 V3+03
05D4 00EE RET
05D6 A658 I=0658
05D8 15D0 GO  05D0
05DA 6040 V0=40
05DC 15E0 GO  05E0
```

```
05DE 60A0  V0=A0              063A FC1E  I=I+VC
05E0 F015  TIME=V0            063C F055  MI=V0:V0
05E2 F007  V0=TIME            063E 789C  V8+9C
05E4 3000  SKIP;V0 EQ 00      0640 00EE  RET
05E6 15E2  GO 05E2            0642 F8F8
05E8 00EE  RET                0644 F8F8
05EA 6001  V0=01              0646 F8F0
05EC 15F0  GO 05F0            0648 9090
05EE 6008  V0=08              064A F090
05F0 F018  TONE=V0            064C F080
05F2 00EE  RET                064E 8080
05F4 A696  I=0696             0650 80E0
05F6 FC1E  I=I+VC             0652 A0A0
05F8 F065  V0:V0=MI           0654 E040
05FA 4000  SKIP;V0 NE 00      0656 4080
05FC 00EE  RET                0658 C0C0
05FE 4001  SKIP;V0 NE 01      065A F090
0600 15CE  GO 05CE            065C F0A0
0602 4003  SKIP;V0 NE 03      065E 90D8
0604 25D6  DO 05D6            0660 A888
0606 15D6  GO 05D6            0662 8888
0608 00E0  ERASE              0664 F090
060A FC29  I=VC(LSDP)         0666 1070
060C 631E  V3=1E              0668 4000
060E 640D  V4=0D              066A 4000
0610 25B6  DO 05B6            066C 8000
0612 15F4  GO 05F4            066E 8000
0614 A690  I=0690             0670 040C
0616 FC1E  I=I+VC             0672 1C3C
0618 8080  VC=V8              0674 7CFC
061A F055  MI=V0:V0           0676 FCFC
061C A696  I=0696             0678 FCFC
061E FC1E  I=I+VC             067A FCFC
0620 8090  V0=V9              067C FF81
0622 F055  MI=V0:V0           067E 8181
0624 00EE  RET                0680 8181
0626 88B4  V8=V8+VB           0682 8181
0628 6063  V0=63              0684 FF80
062A 8085  V0=V0-V8           0686 8080
062C 3F00  SKIP;VF EQ 00      0688 8080
062E 00EE  RET                068A 8080
0630 A68A  I=068A             068C 8080
0632 FC1E  I=I+VC             068E 8080
0634 F065  V0:V0=MI           0690 8080
0636 7001  V0+01              0692 8080
0638 A68A  I=068A
```

8. VIP Deflection

In the VIP DEFLECTION game you position mirrors anywhere on the display screen. The object of the game is to deflect a ball off the mirrors a maximum number of times before hitting the target.

The number of deflections times the target number gives you deflection points. These are added to your previous point total. If you fail to hit the target you get no points. The winner of the game is the player who accumulates 257 or more deflection points.

How To Play VIP Deflection

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.

2. Turn RUN switch on.

3. After the scores appear a letter, the target with a number, and the ball. The letter signifies the player who will program the mirrors. This sequence will be repeated until there is a winner.

4. To program the mirrors select the proper mirror type by using Table 1 as a guide. Key 1 will place a horizontal mirror on the board. Key 2 selects a vertical mirror, Key 3 a slant-left mirror, and Key 4 a slant-right mirror.

Table 1 — Mirror Types

KEY SELECTION	MIRROR
1	──
2	│
3	╲
4	╱

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5. After a mirror has been selected you may position the mirror by using keys 1 through 4 and 6 through 9 (see Table 2 for movement of a mirror). Once a mirror has been selected and positioned it may be fixed into position by pressing key 5.

Table 2 — Mirror Positioning and Ball Direction

Key Selection	Positioning and Direction
1	up and to the left
2	up
3	up and to the right
4	left
6	right
7	down and to the left
8	down
9	down and to the right

6. You may position up to 10 mirrors on the game board. After you have the maximum amount on the board you must press key 0 to progress to the fire mode. If you wish to progress to the fire mode with less than 10 mirrors programmed you may do so by pressing key 0. You fire the ball in the direction you want by using keys 1 through 4 and keys 6 through 9 (see Table 2).

7. After the ball has reached the target or leaves the game board, the player's score is computed and displayed and a new ball and target appear.

```
0200  6A00  VA=00              026E  1282  GO 0282
0202  6B00  VB=00              0270  A53C  I=053C
0204  680A  V8=0A              0272  4202  SKIP;V2 NE 02
0206  6C01  VC=01              0274  1282  GO 0282
0208  6D01  VD=01              0276  A540  I=0540
020A  6E0A  VE=0A              0278  4203  SKIP;V2 NE 03
020C  6750  V7=50              027A  1282  GO 0282
020E  6900  V9=00              027C  A544  I=0544
0210  2400  DO 0400            027E  3204  SKIP;V2 EQ 04
0212  6490  V4=90              0280  1260  GO 0260
0214  243E  DO 043E            0282  601E  V0=1E
0216  00E0  ERASE              0284  610E  V1=0E
0218  C037  V0=RND             0286  D015  SHOW 5MV0V1
021A  C117  V1=RND             0288  6405  V4=05
021C  A54C  I=054C             028A  243E  DO 043E
021E  F155  MI=V0:V1           028C  D015  SHOW 5MV0V1
0220  A530  I=0530             028E  6309  V3=09
0222  D017  SHOW 7MV0V1        0290  E3A1  SKIP;V3 NE KEY
0224  1228  GO 0228            0292  129C  GO 029C
0226  D011  SHOW 1MV0V1        0294  73FF  V3+FF
0228  C03F  V0=RND             0296  3300  SKIP;V3 EQ 00
022A  C11F  V1=RND             0298  1290  GO 0290
022C  A54E  I=054E             029A  1286  GO 0286
022E  F155  MI=V0:V1           029C  4305  SKIP;V3 NE 05
0230  A548  I=0548             029E  12C0  GO 02C0
0232  D011  SHOW 1MV0V1        02A0  2448  DO 0448
0234  3F00  SKIP;VF EQ 00      02A2  40FF  SKIP;V0 NE FF
0236  1226  GO 0226            02A4  6000  V0=00
0238  A54C  I=054C             02A6  41FF  SKIP;V1 NE FF
023A  F165  V0:V1=MI           02A8  6100  V1=00
023C  7001  V0+01              02AA  643C  V4=3C
023E  7101  V1+01              02AC  4202  SKIP;V2 NE 02
0240  84C0  V4=VC              02AE  6440  V4=40
0242  3E0A  SKIP;VE EQ 0A      02B0  9040  SKIP;V0 NE V4
0244  84D0  V4=VD              02B2  70FF  V0+FF
0246  F429  I=V4(LSDP)         02B4  641C  V4=1C
0248  D015  SHOW 5MV0V1        02B6  4201  SKIP;V2 NE 01
024A  124E  GO 024E            02B8  6420  V4=20
024C  D015  SHOW 5MV0V1        02BA  9140  SKIP;V1 NE V4
024E  C038  V0=RND             02BC  71FF  V1+FF
0250  C118  V1=RND             02BE  1286  GO 0286
0252  FE29  I=VE(LSDP)         02C0  F30A  V3=KEY
0254  D015  SHOW 5MV0V1        02C2  247A  DO 047A
0256  3F00  SKIP;VF EQ 00      02C4  7905  V9+05
0258  124C  GO 024C            02C6  1260  GO 0260
025A  64A0  V4=A0              02C8  6700  V7=00
025C  243E  DO 043E            02CA  F30A  V3=KEY
025E  D015  SHOW 5MV0V1        02CC  4300  SKIP;V3 NE 00
0260  F20A  V2=KEY             02CE  12CA  GO 02CA
0262  4200  SKIP;V2 NE 00      02D0  4305  SKIP;V3 NE 05
0264  12C8  GO 02C8            02D2  12CA  GO 02CA
0266  4932  SKIP;V9 NE 32      02D4  6409  V4=09
0268  1260  GO 0260            02D6  8435  V4=V4-V3
026A  A537  I=0537             02D8  3F01  SKIP;VF EQ 01
026C  4201  SKIP;V2 NE 01      02DA  12CA  GO 02CA
```

```
02DC A54E I=054E              034A 78FF V8+FF
02DE F165 VO:V1=MI            034C 4800 SKIP;V8 NE 00
02E0 A548 I=0548              C34E 1364 GO 0364
02E2 D011 SHOW 1MVOV1         0350 3E0A SKIP;VE EQ 0A
02E4 2448 DO 0448             0352 120A GO 020A
02E6 40FF SKIP;V0 NE FF       0354 6E0B VE=0B
02E8 1358 GO 0358             0356 120C GO 020C
02EA 41FF SKIP;V1 NE FF       0358 6430 V4=30
02EC 1358 GO 0358             035A F418 TONE=V4
02EE 4040 SKIP;V0 NE 40       035C 134A GO 034A
02F0 1358 GO 0358             C35E 6AFF VA=FF
02F2 4120 SKIP;V1 NE 20       0360 1364 GO 0364
02F4 1358 GO 0358             0362 6BFF VB=FF
02F6 D011 SHOW 1MVOV1         0364 2400 DO 0400
02F8 4F01 SKIP;VF NE 01       0366 A530 I=0530
02FA 1302 GO 0302             0368 9AB0 SKIP;VA NE VB
02FC 6405 V4=05               036A 136A GO 036A
02FE 243E DO 043E             036C 600D V0=0D
0300 12E2 GO 02E2             036E 6107 V1=07
0302 D011 SHOW 1MVOV1         0370 8BA5 VB=VB-VA
0304 24A4 DO 04A4             0372 3F00 SKIP;VF EQ 00
0306 4200 SKIP;V2 NE 00       0374 602D V0=2D
0308 1310 GO 0310             0376 6440 V4=40
030A 24C0 DO 04C0             0378 D017 SHOW 7MVOV1
030C D011 SHOW 1MVOV1         037A 243E DO 043E
030E 12E2 GO 02E2             037C D017 SHOW 7MVOV1
0310 4700 SKIP;V7 NE 00       037E 6440 V4=40
0312 1358 GO 0358             0380 F418 TONE=V4
0314 A54C I=054C             0382 1376 GO 0376
0316 F165 VO:V1=MI            0384 76AC
0318 A530 I=0530              0386 7795
031A 6305 V3=05               0388 CCDC
031C 6415 V4=15               038A A081
031E D017 SHOW 7MVOV1         038C 10C0
0320 F418 TONE=V4             038E 5544
0322 D017 SHOW 7MVOV1         C390 E42C
0324 243E DO 043E             0392 07CC
0326 73FF V3+FF               0394 9CD3
0328 3300 SKIP;V3 EQ 00       0396 4BC8
032A 131C GO 031C             0398 EE6D
032C 3E0A SKIP;VE EQ 0A       039A 0C40
032E 133E GO 033E             039C B8DC
0330 80C0 V0=VC               039E 8A5C
0332 24F4 DO 04F4             03A0 B421
0334 8A14 VA=VA+V1            03A2 3463
0336 4F01 SKIP;VF NE 01       03A4 33B3
0338 135E GO 035E             03A6 3333
033A 7C01 VC+01               03A8 63B8
033C 134A GO 034A             03AA 73B3
033E 80D0 V0=VD               03AC BB36
0340 24F4 DO 04F4             03AE 3135
0342 8B14 VB=VB+V1            03B0 3233
0344 4F01 SKIP;VF NE 01       03B2 327F
0346 1362 GO 0362             03B4 7331
0348 7D01 VD+01               03B6 9337
```

```
03B8  3293
03BA  F332
03BC  03B2
03BE  1334
03C0  9BFF
03C2  F2F7
03C4  BF3F
03C6  BBB2
03C8  B6AC
03CA  7FFB
03CC  B3BB
03CE  BFDD
03D0  F3FF
03D2  B111
03D4  98B5
03D6  7F3F
03D8  BEAF
03DA  BBB9
03DC  83AD
03DE  EAFB
03E0  CCCE
03E2  CCC8
03E4  ECEC
03E6  DACC
03E8  DCFC
03EA  CDCA
03EC  CC8C
03EE  C8E8
03F0  CEEC
03F2  A8CD
03F4  CACC
03F6  CCC4
03F8  CC6C
03FA  CCCC
03FC  8DEC
03FE  D9CD
0400  00E0  ERASE
0402  6508  V5=08
0404  6610  V6=10
0406  A549  I=0549
0408  FA33  MI=VA(3DD)
040A  F265  V0:V2=MI
040C  242C  DO  042C
040E  6528  V5=28
0410  A549  I=0549
0412  FB33  MI=VB(3DD)
0414  F265  V0:V2=MI
0416  242C  DO  042C
0418  650E  V5=0E
041A  6608  V6=08
041C  600A  V0=0A
041E  F029  I=V0(LSDP)
0420  D565  SHOW 5MV5V6
0422  652E  V5=2E
0424  600B  V0=0B
```

```
0426  F029  I=V0(LSDP)
0428  D565  SHOW 5MV5V6
042A  00EE  RET
042C  F029  I=V0(LSDP)
042E  D565  SHOW 5MV5V6
0430  7506  V5+06
0432  F129  I=V1(LSDP)
0434  D565  SHOW 5MV5V6
0436  7506  V5+06
0438  F229  I=V2(LSDP)
043A  D565  SHOW 5MV5V6
043C  00EE  RET
043E  F415  TIME=V4
0440  F407  V4=TIME
0442  3400  SKIP;V4 EQ 00
0444  1440  GO 0440
0446  00EE  RET
0448  4303  SKIP;V3 NE 03
044A  7001  V0+01
044C  4306  SKIP;V3 NE 06
044E  7001  V0+01
0450  4309  SKIP;V3 NE 09
0452  7001  V0+01
0454  4301  SKIP;V3 NE 01
0456  70FF  V0+FF
0458  4304  SKIP;V3 NE 04
045A  70FF  V0+FF
045C  4307  SKIP;V3 NE 07
045E  70FF  V0+FF
0460  4307  SKIP;V3 NE 07
0462  7101  V1+01
0464  4308  SKIP;V3 NE 08
0466  7101  V1+01
0468  4309  SKIP;V3 NE 09
046A  7101  V1+01
046C  4301  SKIP;V3 NE 01
046E  71FF  V1+FF
0470  4302  SKIP;V3 NE 02
0472  71FF  V1+FF
0474  4303  SKIP;V3 NE 03
0476  71FF  V1+FF
0478  00EE  RET
047A  D015  SHOW 5MV0V1
047C  A500  I=0500
047E  F71E  I=I+V7
0480  4201  SKIP;V2 NE 01
0482  6306  V3=06
0484  4202  SKIP;V2 NE 02
0486  6308  V3=08
0488  4203  SKIP;V2 NE 03
048A  6309  V3=09
048C  4204  SKIP;V2 NE 04
048E  6307  V3=07
0490  4204  SKIP;V2 NE 04
0492  7004  V0+04
```

```
0494  6405  V4=05               0502  0208
0496  F255  MI=V0:V2            0504  0309
0498  2448  DO 0448             0506  0701
049A  74FF  V4+FF              0508  0802
049C  3400  SKIP;V4 EQ 00       050A  0903
049E  1496  GO 0496            050C  0103
04A0  770F  V7+0F               050E  0301
04A2  00EE  RET                 0510  0406
04A4  8500  V5=V0               0512  0604
04A6  8610  V6=V1               0514  0709
04A8  A550  I=0550              0516  0907
04AA  8490  V4=V9               0518  0204
04AC  F265  V0:V2=MI            051A  0307
04AE  5050  SKIP;V0 EQ V5       051C  0402
04B0  14B6  GO 04B6             051E  0608
04B2  9160  SKIP;V1 NE V6       0520  0703
04B4  00EE  RET                 0522  0806
04B6  74FF  V4+FF               0524  0109
04B8  3400  SKIP;V4 EQ 00       0526  0206
04BA  14AC  GO 04AC             0528  0408
04BC  6200  V2=00               052A  0602
04BE  00EE  RET                 052C  0804
04C0  8500  V5=V0               052E  0901
04C2  8610  V6=V1               0530  FCFC
04C4  4201  SKIP;V2 NE 01       0532  FCFC
04C6  A500  I=0500              0534  FCFC
04C8  4202  SKIP;V2 NE 02       0536  FCF8
04CA  A50C  I=050C              0538  0000
04CC  4203  SKIP;V2 NE 03       053A  0000
04CE  A518  I=0518              053C  8080
04D0  4204  SKIP;V2 NE 04       053E  8080
04D2  A524  I=0524              0540  8040
04D4  6206  V2=06               0542  2010
04D6  F165  V0:V1=MI            0544  0810
04D8  9300  SKIP;V3 NE V0       0546  2040
04DA  14EA  GO 04EA             0548  8000
04DC  72FF  V2+FF               054A  0000
04DE  3200  SKIP;V2 EQ 00       054C  1113
04E0  14D6  GO 04D6             054E  1409
04E2  8050  V0=V5               0550  1807
04E4  8160  V1=V6               0552  0319
04E6  A548  I=0548              0554  0803
04E8  00EE  RET                 0556  1A09
04EA  8310  V3=V1               0558  031B
04EC  6405  V4=05               055A  0A03
04EE  F418  TONE=V4             055C  1C0B
04F0  7701  V7+01               055E  0324
04F2  14E2  GO 04E2             0560  0704
04F4  6100  V1=00              0562  2308
04F6  8104  V1=V1+V0            0564  0422
04F8  77FF  V7+FF               0566  0904
04FA  3700  SKIP;V7 EQ 00       0568  210A
04FC  14F6  GO 04F6             056A  0420
04FE  00EE  RET                 056C  0B04
0500  0107                      056E  2000
```

0570	0321	05B8	0309
0572	0103	05BA	1003
0574	2202	05BC	0A11
0576	0323	05BE	030B
0578	0303	05C0	1203
057A	2404	05C2	0C13
057C	0313	05C4	030D
057E	0004	05C6	1403
0580	1201	05C8	2C10
0582	0411	05CA	032D
0584	0204	05CC	1103
0586	1003	05CE	2E12
0588	040F	05D0	032F
058A	0404	05D2	1303
058C	0F0F	05D4	3014
058E	0110	05D6	032B
0590	0F01	05D8	1703
0592	110F	05DA	2C18
0594	0112	05DC	032D
0596	0F01	05DE	1903
0598	130F	05E0	2E1A
059A	010C	05E2	032F
059C	0404	05E4	1B03
059E	0B05	05E6	E6ED
05A0	040A	05E8	CDCE
05A2	0604	05EA	39D5
05A4	0907	05EC	A950
05A6	0408	05EE	4D10
05A8	0804	05F0	6C6E
05AA	1904	05F2	27E8
05AC	031A	05F4	02B3
05AE	0503	05F6	A18D
05B0	1B06	05F8	B5D0
05B2	031C	05FA	CFBE
05B4	0703	05FC	DCE6
05B6	1D08	05FE	D14F

9. VIP Animal Race

ANIMAL RACE is a fun game for one person, with an element of luck—sure to put a smile on your face. Five different animals race against one another and you have the chance to test your expertise at picking the winner.

How To Play Animal Race

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.

2. Turn RUN switch on.

3. Wait until the animals are lined up and ready to start, then select an animal by pressing a letter A through E. A mark will appear to the left of the animal to remind you of the one you have selected.

4. Decide you much you want to bet (up to a limit of $9), then press that key.

5. After the race is over press zero (or any key) to start the next race. Your winnings or losses will be computed and the new total displayed at the beginning of the next race.

Hints for Expert Players

All animals move at approximately the same speed but they start from different positions. The odds for each animal are related to the starting position but include a random element. Some races favor the player and you should bet up to the limit on these. Some races are unfavorable and you should bet carefully on these.

You can win the game by accumlating $256 or more.

```
0200  6D0A   VD=0A
0202  6E02   VE=02
0204  680E   V8=0E
0206  690B   V9=0B
0208  A5B5   I=05B5
020A  2482   DO 0482
020C  682C   V8=2C
020E  2484   DO 0484
0210  681D   V8=1D
0212  6918   V9=18
0214  2484   DO 0484
0216  6B00   VB=00
0218  6C23   VC=23
021A  2458   DO 0458
021C  24C0   DO 04C0
021E  6821   V8=21
0220  6900   V9=00
0222  A4D8   I=04D8
0224  FB1E   I=I+VB
0226  D894   SHOW  4MI@V8V9
0228  FE18   TONE=VE
022A  7B04   VB+04
022C  4B1C   SKIP;VB NE 1C
022E  6B04   VB=04
0230  7CFF   VC+FF
0232  24C0   DO 04C0
0234  3C00   SKIP;VC EQ 00
0236  121A   GO 021A
```

```
0238  00E0   ERASE
023A  F918   TONE=V9
023C  2458   DO 0458
023E  24C0   DO 04C0
0240  6A00   VA=00
0242  6B0A   VB=0A
0244  A600   I=0600
0246  FA1E   I=I+VA
0248  F765   V0:V7=MI
024A  620C   V2=0C
024C  7401   V4+01
024E  FB29   I=VB(LSDP)
0250  D245   SHOW  5MI@V2V4
0252  6213   V2=13
0254  F329   I=V3(LSDP)
0256  D245   SHOW  5MI@V2V4
0258  6217   V2=17
025A  A6A0   I=06A0
025C  D245   SHOW  5MI@V2V4
025E  7A08   VA+08
0260  7B01   VB+01
0262  3A28   SKIP;VA EQ 28
0264  1244   GO 0244
0266  6820   V8=20
0268  6902   V9=02
026A  A5E2   I=05E2
026C  2480   DO 0480
```

```
026E  6226  V2=26
0270  6308  V3=08
0272  D237  SHOW  7MI@V2V3
0274  A5FD  I=05FD
0276  FD33  MI=VD(3DD)
0278  F265  V0:V2=MI
027A  632C  V3=2C
027C  6409  V4=09
027E  4000  SKIP;V0 NE 00
0280  1288  GO 0288
0282  F029  I=V0(LSDP)
0284  D345  SHOW  5MI@V3V4
0286  128C  GO 028C
0288  4100  SKIP;V1 NE 00
028A  1292  GO 0292
028C  F129  I=V1(LSDP)
028E  6331  V3=31
0290  D345  SHOW  5MI@V3V4
0292  F229  I=V2(LSDP)
0294  6336  V3=36
0296  D345  SHOW  5MI@V3V4
0298  A680  I=0680
029A  6824  V8=24
029C  6911  V9=11
029E  2484  DO 0484
02A0  6836  V8=36
02A2  A6A5  I=06A5
02A4  D895  SHOW  5MI@V8V9
02A6  6F0A  VF=0A
02A8  FF15  TIME=VF
02AA  244A  DO 044A
02AC  3010  SKIP;V0 EQ 10
02AE  12B8  GO 02B8
02B0  FF07  VF=TIME
02B2  3F00  SKIP;VF EQ 00
02B4  12AA  GO 02AA
02B6  12A4  GO 02A4
02B8  FE18  TONE=VE
02BA  8C00  VC=V0
02BC  6A09  VA=09
02BE  8AC5  VA=VA-VC
02C0  4F01  SKIP;VF NE 01
02C2  12A4  GO 02A4
02C4  4C0F  SKIP;VC NE 0F
02C6  12A4  GO 02A4
02C8  D895  SHOW  5MI@V8V9
02CA  4F00  SKIP;VF NE 00
02CC  12C8  GO 02C8
02CE  FC29  I=VC(LSDP)
02D0  D895  SHOW  5MI@V8V9
02D2  24A0  DO 04A0
02D4  A5F6  I=05F6
02D6  632C  V3=2C
02D8  6417  V4=17
02DA  D347  SHOW  7MI@V3V4
```

```
02DC  6336  V3=36
02DE  6418  V4=18
02E0  A6A5  I=06A5
02E2  D345  SHOW  5MI@V3V4
02E4  6F0A  VF=0A
02E6  FF15  TIME=VF
02E8  244A  DO 044A
02EA  3010  SKIP;V0 EQ 10
02EC  12F6  GO 02F6
02EE  FF07  VF=TIME
02F0  3F00  SKIP;VF EQ 00
02F2  12E8  GO 02E8
02F4  12E2  GO 02E2
02F6  FE18  TONE=VE
02F8  8B00  VB=V0
02FA  8AD0  VA=VD
02FC  8AB5  VA=VA-VB
02FE  4F00  SKIP;VF NE 00
0300  12E2  GO 02E2
0302  4B00  SKIP;VB NE 00
0304  12E2  GO 02E2
0306  6A09  VA=09
0308  8AB5  VA=VA-VB
030A  4F00  SKIP;VF NE 00
030C  12E2  GO 02E2
030E  D345  SHOW  5MI@V3V4
0310  4F00  SKIP;VF NE 00
0312  130E  GO 030E
0314  FB29  I=VB(LSDP)
0316  D345  SHOW  5MI@V3V4
0318  2494  DO 0494
031A  00E0  ERASE
031C  24C0  DO 04C0
031E  24A0  DO 04A0
0320  A4D6  I=04D6
0322  6038  V0=38
0324  6100  V1=00
0326  D011  SHOW  1MI@V0V1
0328  7101  V1+01
032A  3120  SKIP;V1 EQ 20
032C  1326  GO 0326
032E  601E  V0=1E
0330  610F  V1=0F
0332  6A03  VA=03
0334  FA29  I=VA(LSDP)
0336  D015  SHOW  5MI@V0V1
0338  FE18  TONE=VE
033A  2494  DO 0494
033C  7AFF  VA+FF
033E  D015  SHOW  5MI@V0V1
0340  3A00  SKIP;VA EQ 00
0342  1334  GO 0334
0344  6A00  VA=00
0346  A600  I=0600
0348  FA1E  I=I+VA
```

```
034A F665  V0:V6=MI
034C A600  I=0600
034E FA1E  I=I+VA
0350 70FF  V0+FF
0352 4000  SKIP;V0 NE 00
0354 135A  GO 035A
0356 F055  MI=V0:V0
0358 1372  GO 0372
035A C001  V0=RND
035C 7002  V0+02
035E 9150  SKIP;V1 NE V5
0360 8165  V1=V1-V6
0362 7106  V1+06
0364 7201  V2+01
0366 F255  MI=V0:V2
0368 A500  I=0500
036A F11E  I=I+V1
036C D246  SHOW 6MI@V2V4
036E 4238  SKIP;V2 NE 38
0370 1380  GO 0380
0372 7A08  VA+08
0374 4A18  SKIP;VA NE 18
0376 FE18  TONE=VE
0378 3A28  SKIP;VA EQ 28
037A 1346  GO 0346
037C FE18  TONE=VE
037E 1344  GO 0344
0380 F218  TONE=V2
0382 6806  V8=06
0384 6908  V9=08
0386 A5E2  I=05E2
0388 2484  DO 0484
038A 87A6
038C 8776
038E 8776
0390 770A  V7+0A
0392 97C0  SKIP;V7 NE VC
0394 13C0  GO 03C0
0396 A694  I=0694
0398 2484  DO 0484
039A 24B2  DO 04B2
039C FB29  I=VB(LSDP)
039E 8DB5  VD=VD-VB
03A0 D895  SHOW 5MI@V8V9
03A2 3D00  SKIP;VD EQ 00
03A4 13EE  GO 03EE
03A6 2490  DO 0490
03A8 D895  SHOW 5MI@V8V9
03AA 24B2  DO 04B2
03AC A525  I=0525
03AE 6808  V8=08
03B0 6903  V9=03
03B2 D895  SHOW 5MI@V8V9
03B4 6F10  VF=10
03B6 2496  DO 0496
03B8 D895  SHOW 5MI@V8V9
03BA 89F3
03BC 13B2  GO 03B2
03BE 00EE  RET
03C0 A68A  I=068A
03C2 2484  DO 0484
03C4 24B2  DO 04B2
03C6 A600  I=0600
03C8 FA1E  I=I+VA
03CA F665  V0:V6=MI
03CC 6700  V7=00
03CE 87B4  V7=V7+VB
03D0 73FF  V3+FF
03D2 3300  SKIP;V3 EQ 00
03D4 13CE  GO 03CE
03D6 A5FD  I=05FD
03D8 F733  MI=V7(3DD)
03DA F265  V0:V2=MI
03DC 4100  SKIP;V1 NE 00
03DE 13E4  GO 03E4
03E0 F129  I=V1(LSDP)
03E2 2486  DO 0486
03E4 F229  I=V2(LSDP)
03E6 D895  SHOW 5MI@V8V9
03E8 8D74  VD=VD+V7
03EA 4F01  SKIP;VF NE 01
03EC 140C  GO 040C
03EE A600  I=0600
03F0 FA1E  I=I+VA
03F2 F665  V0:V6=MI
03F4 A500  I=0500
03F6 F11E  I=I+V1
03F8 D245  SHOW 5MI@V2V4
03FA 6F18  VF=18
03FC FF15  TIME=VF
03FE FF07  VF=TIME
0400 244A  DO 044A
0402 3010  SKIP;V0 EQ 10
0404 1238  GO 0238
0406 3F00  SKIP;VF EQ 00
0408 13FE  GO 03FE
040A 13F8  GO 03F8
040C 2490  DO 0490
040E 00E0  ERASE
0410 640E  V4=0E
0412 6200  V2=00
0414 6140  V1=40
0416 A5E2  I=05E2
0418 6806  V8=06
041A 6908  V9=08
041C 2484  DO 0484
041E A68A  I=068A
0420 2484  DO 0484
0422 A600  I=0600
0424 F11E  I=I+V1
```

```
0426  D248  SHOW 8MI@V2V4        0494  6F3C  VF=3C
0428  7201  V2+01                0496  FF15  TIME=VF
042A  3240  SKIP;V2 EQ 40        0498  FF07  VF=TIME
042C  1436  GO 0436              049A  3F00  SKIP;VF EQ 00
042E  7409  V4+09                049C  1498  GO 0498
0430  3420  SKIP;V4 EQ 20        049E  00EE  RET
0432  1412  GO 0412              04A0  A69E  I=069E
0434  140E  GO 040E              04A2  6800  V8=00
0436  7108  V1+08                04A4  89CE
0438  4178  SKIP;V1 NE 78        04A6  899E
043A  6148  V1=48                04A8  899E
043C  6D07  VD=07                04AA  89C5  V9=V9-VC
043E  8D22  VD=VD&V2             04AC  79BB  V9+BB
0440  4D00  SKIP;VD NE 00        04AE  D892  SHOW 2MI@V8V9
0442  1416  GO 0416              04B0  00EE  RET
0444  6F04  VF=04                04B2  A5F6  I=05F6
0446  2496  DO 0496              04B4  6808  V8=08
0448  1422  GO 0422              04B6  6910  V9=10
044A  6000  V0=00                04B8  D897  SHOW 7MI@V8V9
044C  E0A1  SKIP;V0 NE KEY       04BA  6810  V8=10
044E  00EE  RET                  04BC  6911  V9=11
0450  7001  V0+01                04BE  00EE  RET
0452  4010  SKIP;V0 NE 10        04C0  6A00  VA=00
0454  00EE  RET                  04C2  A600  I=0600
0456  144C  GO 044C              04C4  FA1E  I=I+VA
0458  A600  I=0600               04C6  F465  V0:V4=MI
045A  6100  V1=00                04C8  A500  I=0500
045C  6604  V6=04                04CA  F11E  I=I+V1
045E  2466  DO 0466              04CC  D246  SHOW 6MI@V2V4
0460  2466  DO 0466              04CE  7A08  VA+08
0462  2466  DO 0466              04D0  3A28  SKIP;VA EQ 28
0464  2466  DO 0466              04D2  14C2  GO 04C2
0466  C001  V0=RND               04D4  00EE  RET
0468  7001  V0+01                04D6  0101
046A  C203  V2=RND               04D8  817E
046C  872E                       04DA  1800
046E  6306  V3=06                04DC  9942
0470  8375  V3=V3-V7             04DE  DB00
0472  C701  V7=RND               04E0  0000
0474  8374  V3=V3+V7             04E2  8181
0476  8304  V3=V3+V0             04E4  0000
0478  F355  MI=V0:V3             04E6  00C3
047A  7124  V1+24                04E8  3C66
047C  F61E  I=I+V6               04EA  1842
047E  00EE  RET                  04EC  42C3
0480  2486  DO 0486              04EE  4200
0482  2486  DO 0486              04F0  E7E7
0484  2486  DO 0486              04F2  0000
0486  D895  SHOW 5MI@V8V9        04F4  00EE
0488  6F05  VF=05                04F6  8E8A
048A  FF1E  I=I+VF               04F8  8A8A
048C  7808  V8+08                04FA  EEEE
048E  00EE  RET                  04FC  88EC
0490  2492  DO 0492              04FE  28EE
0492  2494  DO 0494              0500  0302
```

0502	020E	0570	2222
0504	0A0A	0572	001D
0506	0506	0574	2242
0508	0612	0576	6605
050A	1E05	0578	001D
050C	0506	057A	2242
050E	0612	057C	6680
0510	1E28	057E	001D
0512	0506	0580	2242
0514	0612	0582	6610
0516	1E10	0584	001D
0518	0506	0586	2242
051A	0612	0588	6608
051C	1E02	058A	001D
051E	0506	058C	2242
0520	0612	058E	6601
0522	1E05	0590	0002
0524	003F	0592	131E
0526	3F3D	0594	1212
0528	2524	0596	0217
052A	0041	0598	382E
052C	4147	059A	0624
052E	6E0A	059C	0424
0530	0041	059E	2F3A
0532	4147	05A0	5611
0534	6D90	05A2	0006
0536	0041	05A4	3522
0538	4147	05A6	3628
053A	6F00	05A8	0006
053C	0041	05AA	3522
053E	4147	05AC	3600
0540	6E12	05AE	0217
0542	0041	05B0	382E
0544	4147	05B2	0628
0546	6D90	05B4	01E9
0548	0003	05B6	ADEB
054A	060E	05B8	A9A9
054C	1426	05BA	515B
054E	0005	05BC	5551
0550	0A22	05BE	5174
0552	2040	05C0	5474
0554	0300	05C2	5457
0556	0268	05C4	F795
0558	3618	05C6	F7A5
055A	060F	05C8	9577
055C	1A16	05CA	4446
055E	4803	05CC	4477
0560	0005	05CE	EFA8
0562	0A42	05D0	AEE2
0564	0C00	05D2	BEF3
0566	0005	05D4	9293
0568	0A42	05D6	929F
056A	0000	05D8	1715
056C	000B	05DA	1711
056E	1E3E	05DC	1177

05DE	1517		0644	5E04
05E0	1517		0646	2654
05E2	2B2A		0648	0506
05E4	1212		064A	06D2
05E6	13A8		064C	A24C
05E8	A8A8		064E	E6C1
05EA	A8B8		0650	0506
05EC	AEAA		0652	C6D2
05EE	EEAA		0654	E2CC
05F0	AAAE		0656	B890
05F2	A8AE		0658	0586
05F4	A84E		065A	0652
05F6	2078		065C	224C
05F8	A070		065E	5E60
05FA	28F0		0660	0506
05FC	2000		0662	86D2
05FE	0100		0664	A28C
0600	0200		0666	C6C1
0602	0302		0668	0506
0604	001E		066A	8692
0606	1800		066C	228C
0608	0124		066E	9830
060A	0301		0670	0506
060C	0642		0672	0612
060E	1200		0674	620C
0610	0148		0676	3E10
0612	0008		0678	00EE
0614	0D66		067A	631A
0616	1800		067C	24C0
0618	026C		067E	00EE
061A	0303		0680	F090
061C	138A		0682	F790
061E	1800		0684	9078
0620	0190		0686	4070
0622	0301		0688	4078
0624	1AAE		068A	ABA9
0626	1800		068C	A9A9
0628	0108		068E	53A2
062A	3806		0690	322A
062C	0018		0692	26A2
062E	1801		0694	8E8A
0630	0104		0696	8A8A
0632	3100		0698	EEEE
0634	0518		069A	88EC
0636	1801		069C	28EE
0638	7F48		069E	C0C0
063A	1C1C		06A0	1848
063C	0B4C		06A2	0848
063E	1800		06A4	1CE0
0640	0302		06A6	2060
0642	020E		06A8	0040

10. VIP Most Dangerous Game

VIP MOST DANGEROUS GAME pits a hunter against a hunted in a maze. The hunter must shoot the hunted before either time runs out or the hunted escapes the maze. However, neither the hunted nor the hunter can see a wall in the maze until he runs into it. There is always at least one path through the maze.

How To Play VIP Most Dangerous Game

1. Load the CHIP-8 interpreter at 0000-01FF and the game program starting at 0200.

2. Turn RUN switch on.

3. Hunted's turn:
   When the arrow appears in the lower left, it is the hunted's turn. Keys 2-4-6-8 control direction (up-left-right-down, respectively). The hunted continues to move until a) he makes 5 moves, b) he hits a wall, or c) key 0 is pressed.

4. Hunter's turn:
   When the arrow appears in the lower right, it is the hunter's turn. The hunter's turn consists of two modes, the move and the shoot. Keys 2-4-6-8 and 0 control both modes. Like the hunted, the hunter continues to move until a) he makes 3 moves, b) he hits a wall, or c) key 0 is pressed. If he hits the wall, case b), he cannot fire a bullet. The hunter may fire one of his bullets using the direction keys 2-4-6-8. The bullet will travel four squares in the corresponding direction, unless a wall is encountered. If the hunter prefers not to use a bullet, he must press key 0.

5. Repeat steps 4 and 5 until:
   a) The number of turns (upper left on the display) expire. The hunted wins.
   b) The hunter lands on or shoots the hunted. The hunter wins.
   c) The hunted lands on the hunter, thereby giving up. The hunter wins.
   d) The hunted reaches the lower right corner of the maze with at least 1 move remaining in his turn. The hunted wins, by escaping the maze.

6. Variations of VIP MOST DANGEROUS GAME may be played by changing certain bytes in the program.

LOCATION	DEFAULT	MEANING
0215	0F	Number of turns in the game.
0217	06	Number of bullets hunter has at start.
0219	03	Number of moves per turn for the hunter.
0221	01	Number of squares per move (hunted and hunter).
022B	05	Number of moves per turn for the hunted.
024B	01	If zero, walls are invisible.
0355	04	Number of squares a bullet will go.
04E3	70	Probability (out of 100$_{hex}$) of a wall appearing.
04EB	FE	If FF, a wall may appear at previously tested boundaries.

```
0200  6001  V0=01                0026E  00E0  ERASE
0202  A5F0  I=05F0               0270  6005  V0=05
0204  F055  MI=V0:V0             0272  22A6  DO 02A6
0206  60FF  V0=FF                0274  2310  DO 0310
0208  6100  V1=00               0276  2424  DC 0424
020A  F055  MI=V0:V0             0278  2310  DO 0310
020C  7101  V1+01                027A  22A6  DO 02A6
020E  3180  SKIP;V1 EQ 80        027C  22A6  DO 02A6
0210  120A  GO 020A              027E  2310  DO 0310
0212  00E0  ERASE                0280  70FF  V0+FF
0214  600F  V0=0F                0282  3000  SKIP;V0 EQ 00
0216  6106  V1=06                0284  1272  GO 0272
0218  6203  V2=03                0286  1200  GO 0200
021A  6300  V3=00                0288  3F01  SKIP;VF EQ 01
021C  642E  V4=2E                028A  126E  GO 026E
021E  651E  V5=1E                028C  00E0  ERASE
0220  6601  V6=01                028E  6005  V0=05
0222  A671  I=0671               0290  22A6  DO 02A6
0224  F655  MI=V0:V6             0292  231A  DO 031A
0226  A5EF  I=05EF               0294  2424  DO 0424
0228  D451  SHOW 1MV4V5          0296  231A  DO 031A
022A  6205  V2=05                0298  22A6  DO 02A6
022C  6412  V4=12                029A  22A6  DO 02A6
022E  6502  V5=02                029C  231A  DO 031A
0230  D451  SHOW 1MV4V5          029E  70FF  V0+FF
0232  A678  I=0678               02A0  3000  SKIP;V0 EQ 00
0234  F655  MI=V0:V6             02A2  1290  GO 0290
0236  A5EF  I=05EF               02A4  1200  GO 0200
0238  6204  V2=04                02A6  6A10  VA=10
023A  6114  V1=14                02A8  6B10  VB=10
023C  D121  SHOW 1MV1V2          02AA  A5C8  I=05C8
023E  7104  V1+04                02AC  DAB5  SHOW 5MVAVB
0240  3130  SKIP;V1 EQ 30        02AE  7A08  VA+08
0242  123C  GO 023C              02B0  A5CD  I=05CD
0244  7204  V2+04                02B2  DAB5  SHOW 5MVAVB
0246  3220  SKIP;V2 EQ 20        02B4  7A08  VA+08
0248  123A  GO 023A              02B6  A5D2  I=05D2
024A  6E01  VE=01                02B8  DAB5  SHOW 5MVAVB
024C  A671  I=0671               02BA  7A08  VA+08
024E  22D6  DO 02D6              02BC  A5D7  I=05D7
0250  2310  DO 0310              02BE  DAB5  SHOW 5MVAVB
0252  2372  DO 0372              02C0  00EE  RET
0254  3F00  SKIP;VF EQ 00        02C2  0100
0256  126A  GO 026A              02C4  0000
0258  2310  DO 0310              02C6  0000
025A  231A  DO 031A              02C8  0000
025C  2332  DO 0332              02CA  0000
025E  3F00  SKIP;VF EQ 00        02CC  0000
0260  1288  GO 0288              02CE  0000
0262  231A  DO 031A              02D0  0000
0264  A682  I=0682               02D2  0000
0266  22D6  DO 02D6              02D4  00D4
0268  124C  GO 024C              02D6  F165  V0:V1=MI
026A  3F01  SKIP;VF EQ 01        02D8  A682  I=0682
026C  128C  GO 028C              02DA  F155  MI=V0:V1
```

```
02DC  8310  V3=V1
02DE  6A01  VA=01
02E0  6B04  VB=04
02E2  22EC  DO 02EC
02E4  8030  V0=V3
02E6  6A33  VA=33
02E8  22EC  DO 02EC
02EA  00EE  RET
02EC  A67F  I=067F
02EE  F033  MI=V0(3DD)
02F0  F265  V0:V2=MI
02F2  4000  SKIP;V0 NE 00
02F4  1308  GO 0308
02F6  F029  I=V0(LSDP)
02F8  DAB5  SHOW 5MVAVB
02FA  7A05  VA+05
02FC  F129  I=V1(LSDP)
02FE  DAB5  SHOW 5MVAVB
0300  7A05  VA+05
0302  F229  I=V2(LSDP)
0304  DAB5  SHOW 5MVAVB
0306  00EE  RET
0308  4100  SKIP;V1 NE 00
030A  1300  GO 0300
030C  7A02  VA+02
030E  12FC  GO 02FC
0310  6A03  VA=03
0312  6B17  VB=17
0314  A5DC  I=05DC
0316  DAB7  SHOW 7MVAVB
0318  00EE  RET
031A  6A37  VA=37
031C  6B17  VB=17
031E  A5E3  I=05E3
0320  DAB7  SHOW 7MVAVB
0322  00EE  RET
0324  0100
0326  0000
0328  0000
032A  0000
032C  0000
032E  0000
0330  00D4
0332  A671  I=0671
0334  F665  V0:V6=MI
0336  23A0  DO 03A0
0338  3F03  SKIP;VF EQ 03
033A  1342  GO 0342
033C  72FF  V2+FF
033E  3200  SKIP;V2 EQ 00
0340  1336  GO 0336
0342  A671  I=0671
0344  F265  V0:V2=MI
0346  A671  I=0671
0348  F655  MI=V0:V6
```

```
034A  4F01  SKIP;VF NE 01
034C  00EE  RET
034E  3F02  SKIP;VF EQ 02
0350  4100  SKIP;V1 NE 00
0352  1364  GO 0364
0354  6604  V6=04
0356  6301  V3=01
0358  23A0  DO 03A0
035A  4F00  SKIP;VF NE 00
035C  1364  GO 0364
035E  71FF  V1+FF
0360  4F01  SKIP;VF NE 01
0362  00EE  RET
0364  70FF  V0+FF
0366  6F00  VF=00
0368  4000  SKIP;V0 NE 00
036A  6FFF  VF=FF
036C  A671  I=0671
036E  F155  MI=V0:V1
0370  00EE  RET
0372  A678  I=0678
0374  F665  V0:V6=MI
0376  442E  SKIP;V4 NE 2E
0378  351E  SKIP;V5 EQ 1E
037A  1380  GO 0380
037C  6F01  VF=01
037E  00EE  RET
0380  23A0  DO 03A0
0382  4F01  SKIP;VF NE 01
0384  139C  GO 039C
0386  3F03  SKIP;VF EQ 03
0388  1390  GO 0390
038A  72FF  V2+FF
038C  3200  SKIP;V2 EQ 00
038E  1376  GO 0376
0390  6F00  VF=00
0392  A678  I=0678
0394  F265  V0:V2=MI
0396  A678  I=0678
0398  F655  MI=V0:V6
039A  00EE  RET
039C  6FFF  VF=FF
039E  00EE  RET
03A0  A684  I=0684
03A2  F955  MI=V0:V9
03A4  A5EF  I=05EF
03A6  2430  DO 0430
03A8  6F00  VF=00
03AA  4000  SKIP;V0 NE 00
03AC  13F6  GO 03F6
03AE  4301  SKIP;V3 NE 01
03B0  D451  SHOW 1MV4V5
03B2  6C00  VC=00
03B4  6D00  VD=00
03B6  4002  SKIP;V0 NE 02
```

```
03B8  6CFF  VC=FF                      0426  F815  TIME=V8
03BA  4004  SKIP;V0 NE 04              0428  F807  V8=TIME
03BC  6DFF  VD=FF                      042A  3800  SKIP;V8 EQ 00
03BE  4006  SKIP;V0 NE 06              042C  1428  GO 0428
03C0  6D01  VD=01                      042E  00EE  RET
03C2  4008  SKIP;V0 NE 08              0430  6000  V0=00
03C4  6C01  VC=01                      0432  D451  SHOW 1MV4V5
03C6  8A40  VA=V4                      0434  E0A1  SKIP;V0 NE KEY
03C8  8B50  VB=V5                      0436  1440  GO 0440
03CA  241A  DO 041A                    0438  7002  V0+02
03CC  2424  DO 0424                    043A  300A  SKIP;V0 EQ 0A
03CE  241A  DO 041A                    043C  1434  GO 0434
03D0  24AE  DO 04AE                    043E  1430  GO 0430
03D2  A5EF  I=05EF                     0440  6D08  VD=08
03D4  4000  SKIP;V0 NE 00              0442  FD18  TONE=VD
03D6  1404  GO 0404                    0444  3F00  SKIP;VF EQ 00
03D8  241A  DO 041A                    0446  D451  SHOW 1MV4V5
03DA  2424  DO 0424                    0448  E0A1  SKIP;V0 NE KEY
03DC  241A  DO 041A                    044A  1448  GO 0448
03DE  4F01  SKIP;VF NE 01              044C  00EE  RET
03E0  1412  GO 0412                    044E  841E
03E2  84A0  V4=VA                      0450  844E
03E4  85B0  V5=VB                      0452  852E
03E6  76FF  V6+FF                      0454  8326
03E8  3600  SKIP;V6 EQ 00              0456  3F01  SKIP;VF EQ 01
03EA  13CA  GO 03CA                    0458  1464  GO 0464
03EC  6D02  VD=02                      045A  7410  V4+10
03EE  FD18  TONE=VD                    045C  75FF  V5+FF
03F0  4301  SKIP;V3 NE 01              045E  A5EC  I=05EC
03F2  DAB1  SHOW 1MVAVB                0460  D453  SHOW 3MV4V5
03F4  6F03  VF=03                      0462  00EE  RET
03F6  A684  I=0684                     0464  7411  V4+11
03F8  8A40  VA=V4                      0466  A5EA  I=05EA
03FA  8B50  VB=V5                      0468  D451  SHOW 1MV4V5
03FC  F965  V0:V9=MI                   046A  00EE  RET
03FE  84A0  V4=VA                      046C  0100
0400  85B0  V5=VB                      046E  00D4
0402  00EE  RET                        0470  A4A0  I=04A0
0404  6D10  VD=10                      0472  810E
0406  FD18  TONE=VD                    0474  8014  V0=V0+V1
0408  DAB1  SHOW 1MVAVB                0476  F01E  I=I+V0
040A  4300  SKIP;V3 NE 00              0478  F265  V0:V2=MI
040C  D451  SHOW 1MV4V5                047A  A5F1  I=05F1
040E  6F02  VF=02                      047C  8084  V0=V0+V8
0410  13F6  GO 03F6                    047E  F01E  I=I+V0
0412  6D20  VD=20                      0480  F065  V0:V0=MI
0414  FD18  TONE=VD                    0482  F11E  I=I+V1
0416  6F01  VF=01                      0484  8100  V1=V0
0418  13F6  GO 03F6                    0486  F065  V0:V0=MI
041A  DAB1  SHOW 1MVAVB                0488  F21E  I=I+V2
041C  8AD4  VA=VA+VD                   048A  8210  V2=V1
041E  8BC4  VB=VB+VC                   048C  8205  V2=V2-V0
0420  DAB1  SHOW 1MVAVB                048E  3F00  SKIP;VF EQ 00
0422  00EE  RET                        0490  8100  V1=V0
0424  6808  V8=08                      0492  F065  V0:V0=MI
```

```
0494  8200  V2=V0                    0502  2470  DO 0470
0496  8215  V2=V2-V1                 0504  8B00  VB=V0
0498  3F00  SKIP;VF EQ 00            0506  1542  GO 0542
049A  8010  V0=V1                    0508  320F  SKIP;V2 EQ 0F
049C  00EE  RET                      050A  1516  GO 0516
049E  0100                           050C  6B00  VB=00
04A0  0700                           050E  6001  V0=01
04A2  07F0                           0510  2470  DO 0470
04A4  0600                           0512  8A00  VA=V0
04A6  F907                           0514  1542  GO 0542
04A8  07F8                           0516  6001  V0=01
04AA  0608                           0518  2470  DO 0470
04AC  00D4                           051A  8A00  VA=V0
04AE  6000  V0=00                    051C  1500  GO 0500
04B0  3A10  SKIP;VA EQ 10            051E  3100  SKIP;V1 EQ 00
04B2  4A30  SKIP;VA NE 30            0520  152C  GO 052C
04B4  00EE  RET                      0522  6A00  VA=00
04B6  3B00  SKIP;VB EQ 00            0524  6002  V0=02
04B8  4B20  SKIP;VB NE 20            0526  2470  DO 0470
04BA  00EE  RET                      0528  8B00  VB=V0
04BC  81A6                           052A  1542  GO 0542
04BE  8116                           052C  3107  SKIP;V1 EQ 07
04C0  71FC  V1+FC                    052E  153A  GO 053A
04C2  82B6                           0530  6B00  VB=00
04C4  A68E  I=068E                   0532  6003  V0=03
04C6  FF55  MI=V0:VF                 0534  2470  DO 0470
04C8  882E                           0536  8A00  VA=V0
04CA  888E                           0538  1542  GO 0542
04CC  888E                           053A  6003  V0=03
04CE  8814  V8=V8+V1                 053C  2470  DO 0470
04D0  A5F1  I=05F1                   053E  8A00  VA=V0
04D2  F81E  I=I+V8                   0540  1524  GO 0524
04D4  F065  V0:V0=MI                 0542  5AB0  SKIP;VA EQ VB
04D6  40FF  SKIP;V0 NE FF            0544  1564  GO 0564
04D8  14E0  GO 04E0                  0546  3AFE  SKIP;VA EQ FE
04DA  40FE  SKIP;V0 NE FE            0548  4AFF  SKIP;VA NE FF
04DC  15BE  GO 05BE                  054A  1556  GO 0556
04DE  15AA  GO 05AA                  054C  A5F1  I=05F1
04E0  C3FF  V3=RND                   054E  F81E  I=I+V8
04E2  6670  V6=70                    0550  60FE  V0=FE
04E4  8364  V3=V3+V6                 0552  F055  MI=V0:V0
04E6  4F01  SKIP;VF NE 01            0554  15BE  GO 05BE
04E8  14F4  GO 04F4                  0556  A5F0  I=05F0
04EA  60FE  V0=FE                    0558  F065  V0:V0=MI
04EC  A5F1  I=05F1                   055A  7001  V0+01
04EE  F81E  I=I+V8                   055C  A5F0  I=05F0
04F0  F055  MI=V0:V0                 055E  F055  MI=V0:V0
04F2  15BE  GO 05BE                  0560  8A00  VA=V0
04F4  8326                           0562  1596  GO 0596
04F6  3F01  SKIP;VF EQ 01            0564  83A0  V3=VA
04F8  151E  GO 051E                  0566  83B5  V3=V3-VB
04FA  3201  SKIP;V2 EQ 01            0568  4F00  SKIP;VF NE 00
04FC  1508  GO 0508                  056A  1572  GO 0572
04FE  6A00  VA=00                    056C  83A0  V3=VA
0500  6000  V0=00                    056E  8AB0  VA=VB
```

```
0570  8B30  VB=V3              05B2  FD18  TONE=VD
0572  4AFE  SKIP;VA NE FE      05B4  244E  DO 044E
0574  1556  GO 0556            05B6  A68E  I=068E
0576  3BFE  SKIP;VB EQ FE      05B8  F565  V0:V5=MI
0578  4BFF  SKIP;VB NE FF      05BA  6000  V0=00
057A  1596  GO 0596            05BC  00EE  RET
057C  63FF  V3=FF              05BE  A68E  I=068E
057E  A5F1  I=05F1             05C0  FF65  V0:VF=MI
0580  4380  SKIP;V3 NE 80      05C2  6001  V0=01
0582  1596  GO 0596            05C4  00EE  RET
0584  F065  V0:V0=MI           05C6  0100
0586  7301  V3+01              05C8  8A8A
0588  5B00  SKIP;VB EQ V0      05CA  AADA
058A  1580  GO 0580            05CC  8A8A
058C  A5F1  I=05F1             05CE  CBAA
058E  F31E  I=I+V3             05D0  9A8A
0590  80A0  V0=VA              05D2  2F28
0592  F055  MI=V0:V0           05D4  AE68
0594  1580  GO 0580            05D6  2F7B
0596  A5F1  I=05F1             05D8  4B7B
0598  F81E  I=I+V8             05DA  504B
059A  80A0  V0=VA              05DC  1020
059C  F055  MI=V0:V0           05DE  40BF
059E  4E00  SKIP;VE NE 00      05E0  4020
05A0  15AA  GO 05AA            05E2  1008
05A2  A68E  I=068E             05E4  0402
05A4  F265  V0:V2=MI           05E6  FD02
05A6  244E  DO 044E            05E8  0408
05A8  15AA  GO 05AA            05EA  E000
05AA  A68E  I=068E             05EC  8080
05AC  FF65  V0:VF=MI           05EE  8080
05AE  244E  DO 044E            05F0  00D4
05B0  6D1E  VD=1E
```

11. VIP Sum Fun

The object of this game is to add up the three digits which appear in the middle of the screen and then hit the key representing the total as fast as you can.

How To Play VIP Sum Fun

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.

2. Turn RUN switch on.

3. You get twenty sets of three digits per game and between zero and ten points per set. The faster you enter the correct total, the more points you win.

4. If you wait more than 3 seconds you get zero points. The correct sum is shown above the three digits after you enter it, and there is a pause before the next set appears.

5. The score is shown in the upper right-hand corner of the screen. The maximum number of points you can score is 200. Between 120 and 159 points is above average. A score of 160 or higher is outstanding.

```
0200  00E0  ERASE
0202  6A00  VA=00
0204  2262  DO  0262
0206  6380  V3=80
0208  228A  DO  028A
020A  6514  V5=14
020C  C003  V0=RND
020E  C103  V1=RND
0210  C203  V2=RND
0212  6400  V4=00
0214  8404  V4=V4+V0
0216  8414  V4=V4+V1
0218  8424  V4=V4+V2
021A  225A  DO  025A
021C  12A4  GO  02A4
021E  6390  V3=90
0220  2282  DO  0282
0222  E4A1  SKIP;V4  NE  KEY
0224  122C  GO  022C
0226  3600  SKIP;V6  EQ  00
0228  76FF  V6+FF
022A  121E  GO  021E
022C  2294  DO  0294
022E  6310  V3=10
0230  2282  DO  0282
0232  229A  DO  029A
0234  6380  V3=80
0236  228A  DO  028A
```

```
0238  00E0  ERASE
023A  8A64  VA=VA+V6
023C  2262  DO  0262
023E  75FF  V5+FF
0240  4500  SKIP;V5  NE  00
0242  124A  GO  024A
0244  6360  V3=60
0246  228A  DO  028A
0248  120C  GO  020C
024A  6412  V4=12
024C  F418  TONE=V4
024E  631A  V3=1A
0250  228A  DO  028A
0252  74FE  V4+FE
0254  3400  SKIP;V4  EQ  00
0256  124C  GO  024C
0258  1258  GO  0258
025A  6810  V8=10
025C  6913  V9=13
025E  2270  DO  0270
0260  00EE  RET
0262  6830  V8=30
0264  6900  V9=00
0266  A2B0  I=02B0
0268  FA33  MI=VA(3DD)
026A  F265  V0:V2=MI
026C  2270  DO  0270
```

```
026E 00EE  RET                        0290 128C  GO 028C
0270 F029  I=V0(LSDP)                 0292 00EE  RET
0272 D895  SHOW 5MI@V8V9              0294 6302  V3=02
0274 7806  V8+06                      0296 F318  TONE=V3
0276 F129  I=V1(LSDP)                 0298 00EE  RET
0278 D895  SHOW 5MI@V8V9              029A 6816  V8=16
027A 7806  V8+06                      029C 690A  V9=0A
027C F229  I=V2(LSDP)                 029E F429  I=V4(LSDP)
027E D895  SHOW 5MI@V8V9              02A0 D895  SHOW 5MI@V8V9
0280 00EE  RET                        02A2 00EE  RET
0282 73FF  V3+FF                      02A4 660A  V6=0A
0284 3300  SKIP;V3 EQ 00              02A6 6380  V3=80
0286 1282  GO 0282                    02A8 2282  DO 0282
0288 00EE  RET                        02AA E4A1  SKIP;V4 NE KEY
028A F315  TIME=V3                    02AC 122C  GO 022C
028C F307  V3=TIME                    02AE 121E  GO 021E
028E 3300  SKIP;V3 EQ 00
```

12. VIP Sequence Shoot

You score points by having the sharp-shooter hit the targets in the proper sequence.

How To Play VIP Sequence Shoot

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.

2. Turn RUN switch on.

3. Pressing the key C causes the little man to shoot the top target, key D shoots the one below it, key E the next lower, and key F the bottom target.

4. One of the four targets flashes and the computer waits for you to shoot it. When you press the correct key you get one point. Then two flash, one after the other. Shoot the one that flashed first, then shoot the other. This gives you two more points. Three targets (when hit in the same order as they flashed) add three points to your score.

5. Each time you shoot such a series of targets in proper sequence, your score increases by the number of targets you hit. And the next series you see is longer by one target. The maximum length of sequence is 22 targets, that is a score of 254.

6. Improper sequencing of shots in any series ends the game.

```
0200  00E0  ERASE
0202  6E00  VE=00
0204  6D00  VD=00
0206  A326  I=0326
0208  6808  V8=08
020A  690B  V9=0B
020C  D89C  SHOW CMI@V8V9
020E  A332  I=0332
0210  6917  V9=17
0212  D899  SHOW 9MI@V8V9
0214  A33B  I=033B
0216  6810  V8=10
0218  6913  V9=13
021A  D892  SHOW 2MI@V8V9
021C  6832  V8=32
021E  6902  V9=02
0220  2312  DO 0312
0222  690A  V9=0A
0224  2312  DO 0312
0226  6912  V9=12
0228  2312  DO 0312
022A  691A  V9=1A
022C  2312  DO 0312
022E  22F6  DO 02F6
0230  61FF  V1=FF
0232  2318  DO 0318
0234  6C00  VC=00
0236  7D01  VD+01
```

```
0238  8AD0  VA=VD
023A  2270  DO 0270
023C  7AFF  VA+FF
023E  3A00  SKIP;VA EQ 00
0240  123A  GO 023A
0242  6000  V0=00
0244  A400  I=0400
0246  FC1E  I=I+VC
0248  F055  MI=V0:V0
024A  22AC  DO 02AC
024C  3A00  SKIP;VA EQ 00
024E  125A  GO 025A
0250  22F6  DO 02F6
0252  8ED4  VE=VE+VD
0254  22F6  DO 02F6
0256  3E16  SKIP;VE EQ 16
0258  1232  GO 0232
025A  6212  V2=12
025C  F218  TONE=V2
025E  611A  V1=1A
0260  F115  TIME=V1
0262  F107  V1=TIME
0264  3100  SKIP;V1 EQ 00
0266  1262  GO 0262
0268  72FE  V2+FE
026A  3200  SKIP;V2 EQ 00
026C  125C  GO 025C
```

```
026E  126E  GO  026E              02DA  D891  SHOW 1MI@V8V9
0270  CB03  VB=RND               02DC  6108  V1=08
0272  7B0C  VB+0C                02DE  2318  DO 0318
0274  80B0  V0=VB                02E0  4F01  SKIP;VF NE 01
0276  A400  I=0400               02E2  12F0  GO 02F0
0278  FC1E  I=I+VC               02E4  D891  SHOW 1MI@V8V9
027A  F055  MI=V0:V0             02E6  6108  V1=08
027C  7C01  VC+01                02E8  2318  DO 0318
027E  61FF  V1=FF                02EA  7804  V8+04
0280  2318  DO 0318              02EC  8904  V9=V9+V0
0282  6832  V8=32                02EE  12DA  GO 02DA
0284  691A  V9=1A                02F0  6102  V1=02
0286  4B0C  SKIP;VB NE 0C        02F2  F118  TONE=V1
0288  6902  V9=02                02F4  1340  GO 0340
028A  4B0D  SKIP;VB NE 0D        02F6  A380  I=0380
028C  690A  V9=0A                02F8  FE33  MI=VE(3DD)
028E  4B0E  SKIP;VB NE 0E        02FA  F265  V0:V2=MI
0290  6912  V9=12                02FC  F029  I=V0(LSDP)
0292  2312  DO 0312              02FE  6810  V8=10
0294  6160  V1=60                0300  6902  V9=02
0296  2318  DO 0318              0302  D895  SHOW 5MI@V8V9
0298  2312  DO 0312              0304  F129  I=V1(LSDP)
029A  610F  V1=0F                0306  7806  V8+06
029C  2318  DO 0318              0308  D895  SHOW 5MI@V8V9
029E  2312  DO 0312              030A  F229  I=V2(LSDP)
02A0  610F  V1=0F                030C  7806  V8+06
02A2  2318  DO 0318              030E  D895  SHOW 5MI@V8V9
02A4  2312  DO 0312              0310  00EE  RET
02A6  610F  V1=0F                0312  A322  I=0322
02A8  2318  DO 0318              0314  D894  SHOW 4MI@V8V9
02AA  00EE  RET                  0316  00EE  RET
02AC  6A00  VA=00                0318  71FF  V1+FF
02AE  A400  I=0400               031A  3100  SKIP;V1 EQ 00
02B0  FA1E  I=I+VA               031C  1318  GO 0318
02B2  7A01  VA+01                031E  00EE  RET
02B4  F065  V0:V0=MI             0320  0180
02B6  3000  SKIP;V0 EQ 00        0322  F0F0
02B8  12BE  GO 02BE              0324  F0F0
02BA  6A00  VA=00                0326  7C7C
02BC  00EE  RET                  0328  FE7C
02BE  FB0A  VB=KEY               032A  7C70
02C0  6102  V1=02                032C  7C38
02C2  F218  TONE=V2              032E  7F7F
02C4  8B05  VB=VB-V0             0330  7C7C
02C6  4B00  SKIP;VB NE 00        0332  7C7C
02C8  12D2  GO 02D2              0334  7C38
02CA  61FF  V1=FF                0336  3838
02CC  2318  DO 0318              0338  3838
02CE  6A01  VA=01                033A  3EE0
02D0  00EE  RET                  033C  8000
02D2  70F2  V0+F2                033E  D4D4
02D4  6813  V8=13                0340  D891  SHOW 1MI@V8V9
02D6  6913  V9=13                0342  12AE  GO 02AE
02D8  A321  I=0321
```

13. VIP Biorhythm

The theory of Biorhythm states that there are three predominant cycles that can influence human behavior. These include a 23-day physical cycle, a 28-day emotional cycle, and a 33-day intellectual cycle. All three cycles start at birth and continue throughout life.

Each cycle consists of a positive and a negative period. Physical, emotional, and intellectual aspects are enhanced during positive periods. Poor performance is indicated by the negative period of a cycle.

A critical day occurs on the crossover from the positive to negative period or vice versa. A critical day indicates instability in a particular aspect.

How To Use VIP Biorhythm

1. Load the CHIP-8 interpreter at 0000-01FF and Biorhythm starting at 0200.

2. Turn RUN switch on.

3. Enter birthdate using 2-digit month, 2-digit day, and 4-digit year.

4. Enter start date using 2-digit month, 2-digit day, and 4-digit year. The start date indicates the first day of the 32-day Biorhythm chart the program will generate.

5. After a period of calculation proportional to the span of time involved, the three cycle curves will be shown for a 32-day period. Each horizontal bit position represents one day in the cycle. The start day, on the left, and every seventh day are indicated by week markers. The first day of a positive or negative period is a critical day.

6. To advance the start date hold key F down until the desired date is reached. To decrement the start date hold key B down. These functions allow changing the start date slightly without reentering all the dates and waiting for the calculations to be performed.

7. Press key 0 to clear the screen and enter a new set of dates.
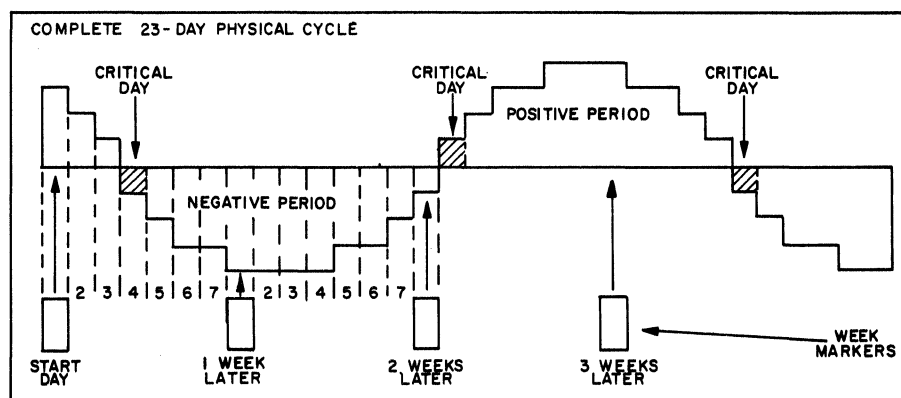
92CM-31180

INTERPRETATION

	Physical	Emotional	Intellectual
Positive Period (Up)	strong, vigorous	good moods, cooperative	good judgment, sharp mentally
Negative Period (Down)	tire easily, less stamina	low enthusiasm, feelings subdued	low attentiveness and concentration
Critical Days (Crossover)	susceptible to injury or illness, low endurance	emotionally unstable, upset easily	poor memory, prone to mistakes

```
0200  A584  I=0584              026E  4400  SKIP;V4 NE  00
0202  6100  V1=00               0270  12B2  GO  02B2
0204  6219  V2=19               0272  4500  SKIP;V5 NE  00
0206  D125  SHOW 5MI@V1V2       0274  12B2  GO  02B2
0208  A588  I=0588              0276  680C  V8=0C
020A  620D  V2=0D               0278  8805  V8=V8-V0
020C  D125  SHOW 5MI@V1V2       027A  4F00  SKIP;VF NE  00
020E  A441  I=0441              027C  12B2  GO  02B2
0210  6201  V2=01               027E  680C  V8=0C
0212  D125  SHOW 5MI@V1V2       0280  8845  V8=V8-V4
0214  A513  I=0513              0282  4F00  SKIP;VF NE  00
0216  6131  V1=31               0284  12B2  GO  02B2
0218  620E  V2=0E               0286  8860  V8=V6
021A  D124  SHOW 4MI@V1V2       0288  8825  V8=V8-V2
021C  A444  I=0444              028A  4F00  SKIP;VF NE  00
021E  6209  V2=09               028C  12B2  GO  02B2
0220  61FF  V1=FF               028E  5620  SKIP;V6 EQ  V2
0222  7107  V1+07               0290  12B8  GO  02B8
0224  D122  SHOW 2MI@V1V2       0292  8870  V8=V7
0226  3122  SKIP;V1 EQ  22      0294  8835  V8=V8-V3
0228  1222  GO  0222            0296  4F00  SKIP;VF NE  00
022A  3209  SKIP;V2 EQ  09      0298  12B2  GO  02B2
022C  1232  GO  0232            029A  5730  SKIP;V7 EQ  V3
022E  6215  V2=15               029C  12B8  GO  02B8
0230  1220  GO  0220            029E  8840  V8=V4
0232  6300  V3=00               02A0  8805  V8=V8-V0
0234  6500  V5=00               02A2  4F00  SKIP;VF NE  00
0236  6600  V6=00               02A4  12B2  GO  02B2
0238  2500  DO  0500            02A6  5400  SKIP;V4 EQ  V0
023A  2518  DO  0518            02A8  12B8  GO  02B8
023C  6000  V0=00               02AA  8850  V8=V5
023E  4400  SKIP;V4 NE  00      02AC  8815  V8=V8-V1
0240  1248  GO  0248            02AE  3F00  SKIP;VF EQ  00
0242  700A  V0+0A               02B0  12B8  GO  02B8
0244  74FF  V4+FF               02B2  F518  TONE=V5
0246  123E  GO  023E            02B4  00E0  ERASE
0248  A608  I=0608              02B6  1200  GO  0200
024A  F055  MI=V0:V0            02B8  8800  V8=V0
024C  2500  DO  0500            02BA  8910  V9=V1
024E  2518  DO  0518            02BC  8A80  VA=V8
0250  A608  I=0608              02BE  253C  DO  053C
0252  F065  V0:V0=MI            02C0  4B00  SKIP;VB NE  00
0254  8044  V0=V0+V4            02C2  12D2  GO  02D2
0256  A600  I=0600              02C4  3B29  SKIP;VB EQ  29
0258  F31E  I=I+V3              02C6  12B2  GO  02B2
025A  F055  MI=V0:V0            02C8  8920  V9=V2
025C  7301  V3+01               02CA  8A30  VA=V3
025E  3308  SKIP;V3 EQ  08      02CC  2554  DO  0554
0260  1238  GO  0238            02CE  3B03  SKIP;VB EQ  03
0262  A600  I=0600              02D0  12B2  GO  02B2
0264  F765  V0:V7=MI            02D2  8950  V9=V5
0266  4000  SKIP;V0 NE  00      02D4  8A40  VA=V4
0268  12B2  GO  02B2            02D6  253C  DO  053C
026A  4100  SKIP;V1 NE  00      02D8  4B00  SKIP;VB NE  00
026C  12B2  GO  02B2            02DA  12EA  GO  02EA
```

```
02DC  3B29  SKIP;VB EQ 29          034A  0714
02DE  12B2  GO 02B2                034C  1BD4
02E0  8960  V9=V6                  034E  2448  DO 0448
02E2  8A70  VA=V7                  0350  A600  I=0600
02E4  2554  DO 0554                0352  F765  V0:V7=MI
02E6  3B03  SKIP;VB EQ 03          0354  75FF  V5+FF
02E8  12B2  GO 02B2                0356  3500  SKIP;V5 EQ 00
02EA  6C00  VC=00                  0358  137C  GO 037C
02EC  6D00  VD=00                  035A  74FF  V4+FF
02EE  6E00  VE=00                  035C  3400  SKIP;V4 EQ 00
02F0  24F2  DO 04F2                035E  1370  GO 0370
02F2  8050  V0=V5                  0360  640C  V4=0C
02F4  39AA  SKIP;V9 EQ AA          0362  77FF  V7+FF
02F6  12FE  GO 02FE                0364  37FF  SKIP;V7 EQ FF
02F8  8015  V0=V0-V1               0366  1370  GO 0370
02FA  24B6  DO 04B6                0368  6763  V7=63
02FC  132A  GO 032A                036A  76FF  V6+FF
02FE  24B6  DO 04B6                036C  46FF  SKIP;V6 NE FF
0300  24DC  DO 04DC                036E  1392  GO 0392
0302  8015  V0=V0-V1               0370  8840  V8=V4
0304  1308  GO 0308                0372  8150  V1=V5
0306  24DC  DO 04DC                0374  8260  V2=V6
0308  24B6  DO 04B6                0376  8370  V3=V7
030A  7801  V8+01                  0378  24DC  DO 04DC
030C  380D  SKIP;V8 EQ 0D          037A  8500  V5=V0
030E  131C  GO 031C                037C  7CFF  VC+FF
0310  6801  V8=01                  037E  4CFF  SKIP;VC NE FF
0312  7301  V3+01                  0380  6C16  VC=16
0314  3364  SKIP;V3 EQ 64          0382  7DFF  VD+FF
0316  131C  GO 031C                0384  4DFF  SKIP;VD NE FF
0318  6300  V3=00                  0386  6D1B  VD=1B
031A  7201  V2+01                  0388  7EFF  VE+FF
031C  24F2  DO 04F2                038A  4EFF  SKIP;VE NE FF
031E  49AA  SKIP;V9 NE AA          038C  6E20  VE=20
0320  132A  GO 032A                038E  A600  I=0600
0322  6003  V0=03                  0390  F755  MI=V0:V7
0324  80E2  V0=V0&VE               0392  2448  DO 0448
0326  F018  TONE=V0                0394  680B  V8=0B
0328  1306  GO 0306                0396  E8A1  SKIP;V8 NE KEY
032A  246A  DO 046A                0398  1342  GO 0342
032C  680B  V8=0B                  039A  680F  V8=0F
032E  E8A1  SKIP;V8 NE KEY         039C  E8A1  SKIP;V8 NE KEY
0330  1340  GO 0340                039E  1342  GO 0342
0332  680F  V8=0F                  03A0  132A  GO 032A
0334  E8A1  SKIP;V8 NE KEY         03A2  7F00  VF+00
0336  1340  GO 0340                03A4  2448  DO 0448
0338  6800  V8=00                  03A6  A600  I=0600
033A  E8A1  SKIP;V8 NE KEY         03A8  F765  V0:V7=MI
033C  12B2  GO 02B2                03AA  8840  V8=V4
033E  132C  GO 032C                03AC  8260  V2=V6
0340  246A  DO 046A                03AE  8370  V3=V7
0342  480B  SKIP;V8 NE 0B          03B0  24DC  DO 04DC
0344  134E  GO 034E                03B2  9050  SKIP;V0 NE V5
0346  13A4  GO 03A4                03B4  6500  V5=00
0348  0100                         03B6  7501  V5+01
```

```
03B8  4501  SKIP;V5 NE 01          0426  8080
03BA  7401  V4+01                  0428  8000
03BC  340D  SKIP;V4 EQ 0D          042A  0000
03BE  13D0  GO 03D0                042C  001F
03C0  6401  V4=01                  042E  1C1F
03C2  7701  V7+01                  0430  1E1F
03C4  3764  SKIP;V7 EQ 64          0432  1E1F
03C6  13D0  GO 03D0                0434  1F1E
03C8  6700  V7=00                  0436  1F1E
03CA  7601  V6+01                  0438  1F29
03CC  4664  SKIP;V6 NE 64          043A  2E37
03CE  1392  GO 0392                043C  3C2B
03D0  7C01  VC+01                  043E  3035
03D2  7D01  VD+01                  0440  3AE0
03D4  7E01  VE+01                  0442  A0E0
03D6  24C2  DO 04C2                0444  8080
03D8  138E  GO 038E                0446  D4D4
03DA  0107                         0448  6500  V5=00
03DC  0E0E                         044A  6602  V6=02
03DE  1616                         044C  6304  V3=04
03E0  160E                         044E  A600  I=0600
03E2  0E07                         0450  F31E  I=I+V3
03E4  0100                         0452  F065  V0:V0=MI
03E6  050B                         0454  A609  I=0609
03E8  0B12                         0456  F033  MI=V0(3DD)
03EA  1212                         0458  F265  V0:V2=MI
03EC  120B                         045A  8410  V4=V1
03EE  0B05                         045C  2518  DO 0518
03F0  00EE                         045E  8420  V4=V2
03F2  0107                         0460  2518  DO 0518
03F4  0E0E                         0462  7301  V3+01
03F6  1616                         0464  3308  SKIP;V3 EQ 08
03F8  1616                         0466  144E  GO 044E
03FA  1616                         0468  00EE  RET
03FC  0E0E                         046A  6420  V4=20
03FE  0701                         046C  6506  V5=06
0400  0005                         046E  6600  V6=00
0402  0B0B                         0470  87C0  V7=VC
0404  1212                         0472  A3DA  I=03DA
0406  1212                         0474  249C  DO 049C
0408  1212                         0476  3400  SKIP;V4 EQ 00
040A  0B0B                         0478  1472  GO 0472
040C  0500                         047A  6420  V4=20
040E  EE00                         047C  6506  V5=06
0410  0000                         047E  660C  V6=0C
0412  0080                         0480  87D0  V7=VD
0414  0000                         0482  A3F2  I=03F2
0416  0000                         0484  249C  DO 049C
0418  8080                         0486  3400  SKIP;V4 EQ 00
041A  0000                         0488  1482  GO 0482
041C  0000                         048A  6420  V4=20
041E  8080                         048C  6506  V5=06
0420  8000                         048E  6618  V6=18
0422  0000                         0490  87E0  V7=VE
0424  0080                         0492  A562  I=0562
```

```
0494  249C  DO 049C                    0502  E4A1  SKIP;V4 NE KEY
0496  3400  SKIP;V4 EQ 00              0504  150E  GO 050E
0498  1492  GO 0492                    0506  7401  V4+01
049A  00EE  RET                        0508  340A  SKIP;V4 EQ 0A
049C  F71E  I=I+V7                     050A  1502  GO 0502
049E  F065  V0:V0=MI                   050C  1500  GO 0500
04A0  30EE  SKIP;V0 EQ EE              050E  F40A  V4=KEY
04A2  14A8  GO 04A8                    0510  00EE  RET
04A4  6700  V7=00                      0512  010C
04A6  00EE  RET                        0514  1290
04A8  A40F  I=040F                     0516  60D4
04AA  F01E  I=I+V0                     0518  A438  I=0438
04AC  D568  SHOW 8MI@V5V6              051A  F51E  I=I+V5
04AE  74FF  V4+FF                      051C  F165  V0:V1=MI
04B0  7501  V5+01                      051E  A349  I=0349
04B2  7701  V7+01                      0520  F61E  I=I+V6
04B4  00EE  RET                        0522  F065  V0:V0=MI
04B6  8C04  VC=VC+V0                   0524  F429  I=V4(LSDP)
04B8  8D04  VD=VD+V0                   0526  D105  SHOW 5MI@V1V0
04BA  8E04  VE=VE+V0                   0528  4503  SKIP;V5 NE 03
04BC  24C2  DO 04C2                    052A  7601  V6+01
04BE  24C2  DO 04C2                    052C  4507  SKIP;V5 NE 07
04C0  00EE  RET                        052E  7601  V6+01
04C2  6B17  VB=17                      0530  7501  V5+01
04C4  8CB5  VC=VC-VB                   0532  4508  SKIP;V5 NE 08
04C6  4F00  SKIP;VF NE 00              0534  6500  V5=00
04C8  7C17  VC+17                      0536  00EE  RET
04CA  6B1C  VB=1C                      0538  416A  SKIP;V1 NE 6A
04CC  8DB5  VD=VD-VB                   053A  7E51  VE+51
04CE  4F00  SKIP;VF NE 00              053C  6B00  VB=00
04D0  7D1C  VD+1C                      053E  A42C  I=042C
04D2  6B21  VB=21                      0540  FA1E  I=I+VA
04D4  8EB5  VE=VE-VB                   0542  F065  V0:V0=MI
04D6  4F00  SKIP;VF NE 00              0544  8095  V0=V0-V9
04D8  7E21  VE+21                      0546  4F01  SKIP;VF NE 01
04DA  00EE  RET                        0548  00EE  RET
04DC  A42C  I=042C                     054A  6B29  VB=29
04DE  F81E  I=I+V8                     054C  491D  SKIP;V9 NE 1D
04E0  F065  V0:V0=MI                   054E  3A02  SKIP;VA EQ 02
04E2  3802  SKIP;V8 EQ 02              0550  6B39  VB=39
04E4  00EE  RET                        0552  00EE  RET
04E6  8920  V9=V2                      0554  4A00  SKIP;VA NE 00
04E8  8A30  VA=V3                      0556  8A90  VA=V9
04EA  2554  DO 0554                    0558  6B03  VB=03
04EC  4B03  SKIP;VB NE 03              055A  8AB2  VA=VA&VB
04EE  7001  V0+01                      055C  3A00  SKIP;VA EQ 00
04F0  00EE  RET                        055E  6B00  VB=00
04F2  69AA  V9=AA                      0560  00EE  RET
04F4  9260  SKIP;V2 NE V6              0562  0107
04F6  5370  SKIP;V3 EQ V7              0564  070E
04F8  6900  V9=00                      0566  0E16
04FA  5840  SKIP;V8 EQ V4              0568  1616
04FC  6900  V9=00                      056A  1616
04FE  00EE  RET                        056C  160E
0500  6400  V4=00                      056E  0E07
```

```
0570  0701            0580  0505
0572  0005            0582  00EE
0574  050B            0584  E040
0576  0B12            0586  4040
0578  1212            0588  E080
057A  1212            058A  E080
057C  1212            058C  E0D4
057E  0B0B
```

14. VIP Programmable Spacefighters

Programmable Spacefighters is a combat game involving 2 to 8 spaceships competing for the domination of a contained field in space. The field of play is a two-dimensional representation of the surface of an oblong spheroid.

The movement and fire of each spacefighter is controlled by programming a series of commands into each fighter's instruction storage table. Once all the spacefighters are programmed they carry out their commands by sequentially executing a single step at a time. The play of the game is divided into rounds. Each spacefighter may execute between 1 and 15 commands per round.

The fighters all have the same appearance and capabilities. Players distinguish between fighters by examining the defense strength and position of their fighter at the beginning of every round.

Each fighter may face in any of 8 directions. All firing and forward movement occurs in the direction a fighter is currently facing. As a spacefighter crosses outside the two-dimensional field of play it wraps around and re-enters on the opposite side of the field. Laser bursts terminate when they travel outside the field or hit a target.

Each round consists of a selected number of steps. Each step is executed in 2 parts. During the first part, every spacefighter wishing to fire may execute a fire operation. The defense strength of any fighter which is hit by a laser burst is reduced by 1 and a small flash appears.

After all fighters have had an opportunity to execute fire instructions, the movement part of the step begins. Any fighter which has had its defense strength reduced to 0 is destroyed and a longer flash appears. The defense strength is changed to a special code so that the fighter will no longer be programmable or take part in the execution phase. The destroyed fighter will still be open to examination during the Defense/Position Check phase. Fighters having a defense strength greater than 0 may execute a movement command if there is one. Breaking each step into 2 such parts removes any strategic advantage to moving first.

The nature of the game, in that there are variable parameters and no fixed victory conditions, allows the players a lot of freedom. Two to eight players can command single fighters. Four or less players can each command multiple fighters. Two fleets could compete to destroy their opponents' flagship first. Handicaps can be implemented through an imbalance of fighters in different fleets. An odd number of players can play in a free-for-all or team game. In a non-combat approach, a full complement of spacefighters could be programmed to perform in kaleidoscopic or other type formations.

How To Play VIP Programmable Spacefighters

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.

2. Turn RUN switch on.

3. Initialization of Game.
   Various parameters are entered at the start of the game to determine the number of spacefighters and other aspects of play.
   S: Enter number of spacefighters. 1 to 8 spacefighters may be used. The program will adjust invalid entries to the nearest valid number.
   D: Enter defense strength. A spacefighter may be hit from 1 to F times by laser fire before being destroyed.
   E: Enter number of command entries. A spacefighter may be programmed with 1 to F commands during the programming phase of each round.
   C: Enter clock duration/no clock. A timer clock 1 to F phorseks in duration may be selected. Each phorsek equals 4 seconds. The clock is not enabled if a 0 is entered. The clock time is the time allowed for each fighter to be set up.
   F: Enter fire power available. A spacefighter may be allowed to fire 1 to F laser bursts per round.
   A: Enter accumulation/no accumulation. A spacefighter may be allowed to accumulate all unused laser bursts by entering 1 to F. Accumulation is not allowed if a 0 is entered.

4. Presentation of Field and Spacefighters.
   The two-dimensional representation of the playing field consists of 10 vertical by 15 horizontal positions indicated by grid markings around the perimeter. The spacefighters will be in their initial positions.

5. Defense/Position Check.
   Enter number of spacefighter to be examined.
   S: Current spacefighter being examined.
   D: Defense strength of current spacefighter.
   Enter 0 to end defense/position check phase.

6. Program Spacefighters.
   Surviving spacefighters are programmed in ascending order. Enter 0 to begin programming first spacefighter. Defense strength and position are shown during programming.
   E: Indicates number of entries left after current command.
   C: Indicates time remaining to program current fighter if clock was selected.

COMMAND	FUNCTION
1	ROTATE 45°CCW, MOVE FWD
2	MOVE FWD
3	ROTATE 45° CW, MOVE FWD
4	ROTATE 45° CCW
5	FIRE
6	ROTATE 45° CW
B	ERASE ALL COMANDS AND REPROGRAM CURRENT SPACEFIGHTER
E	END PROGRAMMING OF CURRENT SPACEFIGHTER
7-A,C,D,F	REST, NO OPERATION
0	REST; BEGIN PROGRAMMING NEXT SPACEFIGHTER

ENTER 0 TO BEGIN PROGRAMMING EACH SUCCESSIVE SPACEFIGHTER.

7. Execute Commands
  Enter 0 after all spacefighters are programmed to start execution of commands.

8. The recommended starting point when trying the game out is with 1 or 2 spacefighters, any defense, F (15_{10}) entries per round, no clock, F(15_{10}) fire power and any accumulation:

S: 1 or 2
D: 1
E: F
C: 0
F: F
A: 0

  Use the above to try out the movement and fire execution of the fighters. Try performing loops, figure 8's, tight turns, maximum fire coverage techniques, etc. Start out simple when first playing the game against an opponent. Eight spacefighters can get very complicated.

9. Changing different parameters creates very different effects on the play of the game. The main effect of a large number of fighters is a more complicated game. A large number of entries per round results in a more lively game involving farsighted planning. Fewer entries involves more thinking and reacting to immediate developments but is not without strategy when there are multiple fighters opposing each other. The clock provides pressure which can be greatly increased by the moves-to-time ratio. More fire power produces a more violent game while less fire power increases the importance of movement and positioning. Accumulation of fire power can have long range effects if there is low fire power and a large number of moves per round.

```
0200  611E  V1=1E            026E  3511  SKIP;V5 EQ 11
0202  620E  V2=0E            0270  126A  GO 026A
0204  A5D5  I=05D5           0272  6500  V5=00
0206  D123  SHOW 3MV1V2      0274  6100  V1=00
0208  6500  V5=00            0276  6208  V2=08
020A  2570  DO 0570          0278  2592  DO 0592
020C  7501  V5+01            027A  7501  V5+01
020E  3506  SKIP;V5 EQ 06    027C  7206  V2+06
0210  120A  GO 020A          027E  3503  SKIP;V5 EQ 03
0212  A5FB  I=05FB           0280  1278  GO 0278
0214  F565  V0:V5=MI         0282  A5FE  I=05FE
0216  4400  SKIP;V4 NE 00    0284  F065  V0:V0=MI
0218  6401  V4=01            0286  1470  GO 0470
021A  4200  SKIP;V2 NE 00    0288  2592  DO 0592
021C  6201  V2=01            028A  6104  V1=04
021E  4100  SKIP;V1 NE 00    028C  7201  V2+01
0220  6101  V1=01            028E  A5D5  I=05D5
0222  4000  SKIP;V0 NE 00    0290  D123  SHOW 3MV1V2
0224  6001  V0=01            0292  72FA  V2+FA
0226  6608  V6=08            0294  3203  SKIP;V2 EQ 03
0228  8602  V6=V6&V0         0296  1290  GO 0290
022A  3600  SKIP;V6 EQ 00    0298  6000  V0=00
022C  6008  V0=08            029A  12A6  GO 02A6
022E  8610  V6=V1            029C  2538  DO 0538
0230  8150  V1=V5            029E  F065  V0:V0=MI
0232  A5FB  I=05FB           02A0  2540  DO 0540
0234  F455  MI=V0:V4         02A2  A5A4  I=05A4
0236  8360  V3=V6            02A4  F065  V0:V0=MI
0238  6400  V4=00            02A6  7001  V0+01
023A  00E0  ERASE            02A8  4064  SKIP;V0 NE 64
023C  6E00  VE=00            02AA  6000  V0=00
023E  8BE0  VB=VE            02AC  2538  DO 0538
0240  6A03  VA=03            02AE  F055  MI=V0:V0
0242  A5A5  I=05A5           02B0  2540  DO 0540
0244  255E  DO 055E          02B2  FE0A  VE=KEY
0246  F265  V0:V2=MI         02B4  4E00  SKIP;VE NE 00
0248  6A05  VA=05            02B6  12D0  GO 02D0
024A  A600  I=0600           02B8  7EFF  VE+FF
024C  255E  DO 055E          02BA  6608  V6=08
024E  F455  MI=V0:V4         02BC  86E2  V6=V6&VE
0250  2564  DO 0564          02BE  3600  SKIP;V6 EQ 00
0252  7E01  VE+01            02C0  6E07  VE=07
0254  A5FB  I=05FB           02C2  252C  DO 052C
0256  F065  V0:V0=MI         02C4  2518  DO 0518
0258  50E0  SKIP;V0 EQ VE    02C6  2506  DO 0506
025A  123E  GO 023E          02C8  4710  SKIP;V7 NE 10
025C  A5BD  I=05BD           02CA  12C6  GO 02C6
025E  653E  V5=3E            02CC  2518  DO 0518
0260  6601  V6=01            02CE  12B2  GO 02B2
0262  D56D  SHOW DMV5V6      02D0  A5F5  I=05F5
0264  6610  V6=10            02D2  F965  V0:V9=MI
0266  D56D  SHOW DMV5V6      02D4  252C  DO 052C
0268  661F  V6=1F            02D6  43F0  SKIP;V3 NE F0
026A  75F7  V5+F7            02D8  1362  GO 0362
026C  D561  SHOW 1MV5V6      02DA  FA0A  VA=KEY
```

```
02DC  2518  DO  0518              034A  252C  DO  052C
02DE  A5FD  I=05FD                034C  4600  SKIP;V6 NE 00
02E0  F065  V0:V0=MI              034E  1356  GO 0356
02E2  8D00  VD=V0                 0350  8544  V5=V5+V4
02E4  24FC  DO  04FC              0352  4F01  SKIP;VF NE 01
02E6  6800  V8=00                 0354  65FF  V5=FF
02E8  600E  V0=0E                 0356  8450  V4=V5
02EA  F055  MI=V0:V0              0358  6A05  VA=05
02EC  7801  V8+01                 035A  A600  I=0600
02EE  380F  SKIP;V8 EQ 0F        035C  24D8  DO  04D8
02F0  12EA  GO 02EA               035E  EA9E  SKIP;VA EQ KEY
02F2  24DE  DO  04DE              0360  135E  GO 035E
02F4  7DFF  VD+FF                 0362  A5FB  I=05FB
02F6  24E4  DO  04E4              0364  F065  V0:V0=MI
02F8  252C  DO  052C              0366  7E01  VE+01
02FA  2506  DO  0506              0368  50E0  SKIP;V0 EQ VE
02FC  3710  SKIP;V7 EQ 10        036A  12D0  GO 02D0
02FE  F70A  V7=KEY               036C  A5F0  I=05F0
0300  A5FE  I=05FE                036E  FD65  V0:VD=MI
0302  F065  V0:V0=MI              0370  7DFF  VD+FF
0304  4000  SKIP;V0 NE 00        0372  6E00  VE=00
0306  131A  GO 031A               0374  252C  DO  052C
0308  F807  V8=TIME              0376  43F0  SKIP;V3 NE F0
030A  3800  SKIP;V8 EQ 00        0378  1384  GO 0384
030C  131A  GO 031A               037A  24FC  DO  04FC
030E  24E4  DO  04E4              037C  FD1E  I=I+VD
0310  79FF  V9+FF                 037E  F065  V0:V0=MI
0312  24DE  DO  04DE              0380  4005  SKIP;V0 NE 05
0314  4900  SKIP;V9 NE 00        0382  1412  GO 0412
0316  133C  GO 033C               0384  7E01  VE+01
0318  24E4  DO  04E4              0386  A5FB  I=05FB
031A  4710  SKIP;V7 NE 10        0388  F065  V0:V0=MI
031C  12F8  GO 02F8               038A  50E0  SKIP;V0 EQ VE
031E  370B  SKIP;V7 EQ 0B        038C  1374  GO 0374
0320  1326  GO 0326               038E  6E00  VE=00
0322  24E4  DO  04E4              0390  6900  V9=00
0324  12DE  GO 02DE               0392  252C  DO  052C
0326  370E  SKIP;V7 EQ 0E        0394  4300  SKIP;V3 NE 00
0328  132E  GO 032E               0396  1406  GO 0406
032A  24E4  DO  04E4              0398  43F0  SKIP;V3 NE F0
032C  133C  GO 033C               039A  13BA  GO 03BA
032E  24FC  DO  04FC              039C  24FC  DO  04FC
0330  FD1E  I=I+VD                039E  FD1E  I=I+VD
0332  8070  V0=V7                 03A0  F065  V0:V0=MI
0334  F055  MI=V0:V0              03A2  300E  SKIP;V0 EQ 0E
0336  24E4  DO  04E4              03A4  69FF  V9=FF
0338  3D00  SKIP;VD EQ 00        03A6  4002  SKIP;V0 NE 02
033A  12F4  GO 02F4               03A8  13E4  GO 03E4
033C  252C  DO  052C              03AA  4001  SKIP;V0 NE 01
033E  2518  DO  0518              03AC  13D6  GO 03D6
0340  A5FC  I=05FC                03AE  4003  SKIP;V0 NE 03
0342  F065  V0:V0=MI              03B0  13D6  GO 03D6
0344  8600  V6=V0                 03B2  4004  SKIP;V0 NE 04
0346  A5FA  I=05FA                03B4  13DE  GO 03DE
0348  F565  V0:V5=MI              03B6  4006  SKIP;V0 NE 06
```

```
03B8  13DE  GO 03DE
03BA  7E01  VE+01
03BC  A5FB  I=05FB
03BE  F065  V0:V0=MI
03C0  6C00  VC=00
03C2  FC15  TIME=VC
03C4  FC07  VC=TIME
03C6  3C00  SKIP;VC EQ 00
03C8  13C4  GO 03C4
03CA  5E00  SKIP;VE EQ V0
03CC  1392  GO 0392
03CE  3900  SKIP;V9 EQ 00
03D0  4D00  SKIP;VD NE 00
03D2  129C  GO 029C
03D4  1370  GO 0370
03D6  7003  V0+03
03D8  8500  V5=V0
03DA  24C0  DO 04C0
03DC  13E8  GO 03E8
03DE  8500  V5=V0
03E0  24C0  DO 04C0
03E2  13FC  GO 03FC
03E4  252C  DO 052C
03E6  2564  DO 0564
03E8  8600  V6=V0
03EA  248E  DO 048E
03EC  A5C8  I=05C8
03EE  6F00  VF=00
03F0  D122  SHOW 2MV1V2
03F2  4F01  SKIP;VF NE 01
03F4  1400  GO 0400
03F6  8060  V0=V6
03F8  D122  SHOW 2MV1V2
03FA  24D2  DO 04D2
03FC  2564  DO 0564
03FE  13BA  GO 03BA
0400  D122  SHOW 2MV1V2
0402  252C  DO 052C
0404  13FC  GO 03FC
0406  63F0  V3=F0
0408  24D2  DO 04D2
040A  2478  DO 0478
040C  2564  DO 0564
040E  2478  DO 0478
0410  13BA  GO 03BA
0412  252C  DO 052C
0414  4400  SKIP;V4 NE 00
0416  1384  GO 0384
0418  74FF  V4+FF
041A  24D2  DO 04D2
041C  8700  V7=V0
041E  248E  DO 048E
0420  4FFF  SKIP;VF NE FF
0422  1384  GO 0384
0424  6603  V6=03
0426  8B70  VB=V7
0428  8B62  VB=VB&V6
042A  6A03  VA=03
042C  A5DF  I=05DF
042E  255E  DO 055E
0430  6F02  VF=02
0432  FF18  TONE=VF
0434  D123  SHOW 3MV1V2
0436  8CF0  VC=VF
0438  D123  SHOW 3MV1V2
043A  8070  V0=V7
043C  3C01  SKIP;VC EQ 01
043E  141E  GO 041E
0440  8510  V5=V1
0442  8620  V6=V2
0444  6B00  VB=00
0446  9BE0  SKIP;VB NE VE
0448  1464  GO 0464
044A  252E  DO 052E
044C  43F0  SKIP;V3 NE F0
044E  1464  GO 0464
0450  5150  SKIP;V1 EQ V5
0452  1464  GO 0464
0454  5260  SKIP;V2 EQ V6
0456  1464  GO 0464
0458  3300  SKIP;V3 EQ 00
045A  73FF  V3+FF
045C  24D4  DO 04D4
045E  2482  DO 0482
0460  2482  DO 0482
0462  1384  GO 0384
0464  7B01  VB+01
0466  A5FB  I=05FB
0468  F065  V0:V0=MI
046A  50B0  SKIP;V0 EQ VB
046C  1446  GO 0446
046E  1384  GO 0384
0470  3000  SKIP;V0 EQ 00
0472  1288  GO 0288
0474  72FA  V2+FA
0476  128A  GO 028A
0478  6F03  VF=03
047A  A5DF  I=05DF
047C  D123  SHOW 3MV1V2
047E  A5E2  I=05E2
0480  D123  SHOW 3MV1V2
0482  FF18  TONE=VF
0484  A5E8  I=05E8
0486  D123  SHOW 3MV1V2
0488  A5E5  I=05E5
048A  D123  SHOW 3MV1V2
048C  00EE  RET
048E  A5F1  I=05F1
0490  F01E  I=I+V0
0492  F065  V0:V0=MI
```

```
0494  8204  V2=V2+V0              0502  255E  DO  055E
0496  6001  V0=01                 0504  00EE  RET
0498  F01E  I=I+V0                0506  2564  DO  0564
049A  F065  V0:V0=MI              0508  6700  V7=00
049C  8104  V1=V1+V0              050A  E7A1  SKIP;V7 NE KEY
049E  6F00  VF=00                 050C  1514  GO  0514
04A0  310E  SKIP;V1 EQ 0E         050E  7701  V7+01
04A2  14A8  GO  04A8              0510  3710  SKIP;V7 EQ 10
04A4  613B  V1=3B                 0512  150A  GO  050A
04A6  6FFF  VF=FF                 0514  2564  DO  0564
04A8  313E  SKIP;V1 EQ 3E         0516  00EE  RET
04AA  14B0  GO  04B0              0518  7E01  VE+01
04AC  6111  V1=11                 051A  6507  V5=07
04AE  6FFF  VF=FF                 051C  6608  V6=08
04B0  32FD  SKIP;V2 EQ FD         051E  FE29  I=VE(LSDP)
04B2  14B8  GO  04B8              0520  D565  SHOW 5MV5V6
04B4  621B  V2=1B                 0522  660E  V6=0E
04B6  6FFF  VF=FF                 0524  F329  I=V3(LSDP)
04B8  321E  SKIP;V2 EQ 1E         0526  D565  SHOW 5MV5V6
04BA  00EE  RET                   0528  7EFF  VE+FF
04BC  6200  V2=00                 052A  00EE  RET
04BE  14B6  GO  04B6              052C  8BE0  VB=VE
04C0  252C  DO  052C              052E  6A05  VA=05
04C2  8600  V6=V0                 0530  A600  I=0600
04C4  2564  DO  0564              0532  255E  DO  055E
04C6  8060  V0=V6                 0534  F465  V0:V4=MI
04C8  4504  SKIP;V5 NE 04         0536  00EE  RET
04CA  70FE  V0+FE                 0538  A5A4  I=05A4
04CC  7001  V0+01                 053A  6500  V5=00
04CE  6607  V6=07                 053C  6601  V6=01
04D0  8062  V0=V0&V6              053E  00EE  RET
04D2  8BE0  VB=VE                 0540  A630  I=0630
04D4  6A05  VA=05                 0542  F033  MI=V0(3DD)
04D6  A600  I=0600                0544  F265  V0:V2=MI
04D8  255E  DO  055E              0546  F129  I=V1(LSDP)
04DA  F455  MI=V0:V4              0548  D565  SHOW 5MV5V6
04DC  00EE  RET                   054A  F229  I=V2(LSDP)
04DE  68F0  V8=F0                 054C  7505  V5+05
04E0  F815  TIME=V8               054E  D565  SHOW 5MV5V6
04E2  00EE  RET                   0550  00EE  RET
04E4  6507  V5=07                 0552  6C00  VC=00
04E6  6614  V6=14                 0554  4A00  SKIP;VA NE 00
04E8  FD29  I=VD(LSDP)            0556  00EE  RET
04EA  D565  SHOW 5MV5V6           0558  8CB4  VC=VC+VB
04EC  A5FE  I=05FE                055A  7AFF  VA+FF
04EE  F065  V0:V0=MI              055C  1554  GO  0554
04F0  4000  SKIP;V0 NE 00         055E  2552  DO  0552
04F2  00EE  RET                   0560  FC1E  I=I+VC
04F4  661A  V6=1A                 0562  00EE  RET
04F6  F929  I=V9(LSDP)            0564  6A03  VA=03
04F8  D565  SHOW 5MV5V6           0566  8B00  VB=V0
04FA  00EE  RET                   0568  A5C8  I=05C8
04FC  8BE0  VB=VE                 056A  255E  DO  055E
04FE  6A0F  VA=0F                 056C  D123  SHOW 3MV1V2
0500  A628  I=0628                056E  00EE  RET
```

```
0570  620D  V2=0D              05B6  0000
0572  611A  V1=1A              05B8  351B
0574  2592  DO  0592           05BA  0417
0576  6121  V1=21              05BC  0049
0578  259E  DO  059E           05BE  0000
057A  A5FB  I=05FB             05C0  4000
057C  F51E  I=I+V5             05C2  0040
057E  F055  MI=V0:V0           05C4  0000
0580  6678  V6=78              05C6  4000
0582  F615  TIME=V6            05C8  0040
0584  F607  V6=TIME            05CA  A000
0586  3600  SKIP;V6  EQ  00    05CC  C040
0588  1584  GO  0584           05CE  8040
058A  611A  V1=1A              05D0  8040
058C  2592  DO  0592           05D2  C000
058E  6121  V1=21              05D4  A040
0590  15A0  GO  05A0           05D6  0040
0592  A5EB  I=05EB             05D8  6000
0594  F51E  I=I+V5             05DA  2040
0596  F065  V0:V0=MI           05DC  2000
0598  F029  I=V0(LSDP)`        05DE  6040
059A  D125  SHOW  5MV1V2       05E0  4040
059C  00EE  RET                05E2  2040
059E  F30A  V3=KEY             05E4  8000
05A0  8030  V0=V3              05E6  E000
05A2  1598  GO  0598           05E8  8040
05A4  0106                     05EA  2005
05A6  3B0F                     05EC  0D0E
05A8  0211                     05EE  0C0F
05AA  0C00                     05F0  0AFD
05AC  291B                     05F2  FD00
05AE  0423                     05F4  0303
05B0  0000                     05F6  0300
05B2  1D1B                     05F8  FDFD
05B4  042F                     05FA  FDD4
```

15. VIP Lunar Lander

You are descending to the floor of a 250-foot crater. The right side of the TV display shows amount of fuel, feet from the bottom, and fall rate per cycle. Length of fall rate cycle changes from about ¼ second to one second. The fall rate increases by one foot per second/per cycle. The computer will update the display only at the end of each cycle.

The left side of the display shows the Lunar Lander descending from 250 feet. The Lander will first appear at one of sixteen locations. It will then slowly drop down the crater. The crater walls have rock formations protruding from them which must be avoided. If either rocket motor should touch any part of the crater, the Lander will explode in a cloud of smoke, and disintegrate. (Remember, these are atomic thrusters and react like miniature atomic bombs upon impact.)

When you reach 32 feet, the display will change, and you will see the crater floor. You must now land between the rock formations on the floor, and maintain a minimum fall rate. As you drop your fall rate to zero, you soon discover that the Lander becomes more and more unstable just as any hovering object would. And now with perfect skill you guide the ship in for a perfect touch down, or?

How To Play VIP Lunar Lander

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.

2. Key 2 controls the thrust of the Lunar Lander. One tone beep equals one pound of fuel and one foot of thrust.

3. Key 4 controls the horizontal stabilizing engine, and moves the Lander one foot to the left per one pound of fuel.

4. Key 6 controls stabilization to the right.

5. Stabilization controls only react after: (a) a complete fall cycle, or (b) after the key 1 thrust control is pressed. You must be aware of this at all times or you will crash even though either key 4 or 6 is pressed.

6. At the end of each cycle, the Lunar Lander will move randomly at the rate of one foot either right or left. Therefore, as the fall rate approaches zero, the Lander becomes more uncontrollable, and your horizontal stabilizers react more quickly. (Just like the real thing.)

7. If you land too fast, the Lander will bounce and flip over.

8. If you run out of fuel, the Lander will crash.

9. You will not be allowed to go above 250 feet. If you try to do so you will just waste fuel.

10. Once you reach 32 feet and move into the landing display, you will not be allowed to rise above 26 feet. Trying to do so will waste fuel.

11. Game Options

You may select one of three options at the beginning of the game.

Option: 1—You start at 250 feet. You are given 150 pounds of fuel. You must land at 5 feet per second or less. The initial descent display is easy to maneuver through.
Option: 2—You start at 250 feet. You have 200 pounds of fuel. You must land at 3 feet per second or less. The initial descent display is hard to maneuver through.
Option: 3—You start at 32 feet. You have 100 pounds of fuel. You must land at 3 feet per second or less. This display allows you to practice landing. You should consider Option: 2 as the complete game when trying for Astronaut Ratings.

12. Astronaut Ratings

The computer will award you with ratings depending on how good a lander you are:

You will obtain the rating of Astronaut by landing without regard to fall rate or fuel. You must not exceed fall rate, or zero fuel.

You will obtain the rating of Astronaut Pilot, by landing with regard to fuel. 80 pounds or more if you land between the two rock formations on the floor, and 50 pounds or more if you land between the crater wall and a rock formation.

You will obtain the rating of Astronaut Captain by landing the ship with regard to fuel as per above, and if the fall rate is two feet per second or less. (Not an easy task, as you will soon discover.)

13. About Graphics

This game has some interesting graphic displays when you run out of fuel, crash, land too fast, when you land successfully. I will leave them to your discovery, as they are fun to watch.

14. Landing Sites

The final landing display will appear somewhat like the illustration below. You may land in any of the three locations pointed to. To land between the crater walls and the rock formations, you will have to first bring the Lander to a zero fall rate while hovering in the center landing area. Then bring the ship up and just over the rock formation, and then let it drop down to the landing site. At the last moment, a few

92CS-31183
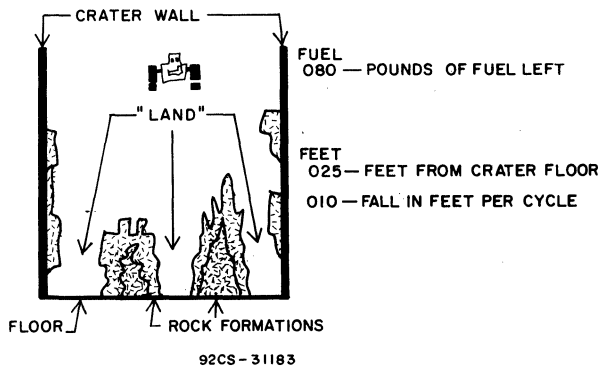
taps on the thruster button will slow the Lander to the required fall rate. It will take you many tries to land here, but don't give up, it can be done!!

NOTE: VIP Lunar Lander requires at least 3K of RAM. RAM memories are available to increase your VIP from 2K to 3K at your local computer store or by contacting:

RCA VIP Marketing
New Holland Avenue
Lancaster, PA 17604

```
0200   1202 6330 F315 A414   6105 6200 256C A438;
0210   6108 6212 2568 A456   6100 621A 2542 2542;
0220   1798 0000 0000 A4E1   6100 6200 D121 7201;
0230   321F 122C 612E 6200   D121 7201 321F 1238;
0240   15B6 A4D1 6100 6200   D125 A570 FA33 F265;
0250   6331 6406 2258 00EE   F029 D345 7305 F129;
0260   D345 7305 F229 D345   00EE 0000 A4D6 6118;
0270   6200 D125 A573 FB33   F265 6331 6413 2258;
0280   00EE 0000 A4CC 6130   6200 D125 A576 FC33;
0290   F265 6331 641A 2258   00EE 0000 6AFA 6BFA;
02A0   A570 F265 6331 6406   2258 00EE A573 F265;
02B0   6331 6413 2258 00EE   A576 F265 6331 641A;
02C0   2258 00EE 0000 0000   6602 C70F 6800 770B;
02D0   6E02 6302 E3A1 23D2   6304 E3A1 257C 6306;
02E0   E3A1 236E 12E6 7C01   8EC0 7BFF 4B00 165E;
02F0   4B1A 2394 7EFF 7801   23EA 3E00 12EA C001;

0300   3000 1308 7701 130A   77FF 22A0 224A 22AC;
0310   2274 23EA 22B8 228C   12D0 0000 6302 E3A1;
0320   13D2 00EE 6300 6A96   6BFA 6C04 A346 6130;
0330   6200 252E A355 6130   620D 252E 224A 2274;
0340   228C 12C8 0000 EA8A   EA8A 8EE8 88E8 88EE;
0350   0000 0000 00EE 88EE   888E EE84 E484 E400;
0360   0000 0000 7AFF 3A00   13D6 1854 0000 F618;
0370   7701 7AFF 4A00 1854   23EA 6306 E3A1 136E;
0380   00EE 77FF C0F8 FEFF   E080 A384 6101 620C;
0390   D126 00EE 25BE A4E2   6100 6201 D12F A4F1;
03A0   720F D12F A500 6126   6201 D12F 720F D12F;
03B0   A51E 610D 6218 D127   A525 611F 6218 D127;
03C0   A4DE 6100 621F D121   7108 3130 13C6 00EE;
03D0   0000 F618 1364 3C00   7CFF 4BFA 13E6 4B1A;
03E0   13E6 7B01 78FF 3E00   7EFF A4DB D785 6F00;
03F0   A4E1 8980 7905 8D70   DD91 4F01 16D4 DD91;
```

```
0400   6F00 7D07 DD91 4F01    17F4 DD91 A4DB D785;
0410   131C 0000 8A8A 8A8A    EE8B CAAB 9A8A BCB4;
0420   BCA8 AC47 4547 4575    4564 544C 45EE A8AE;
0430   A8EE F0D0 F0A0 B000    97A4 C7A4 9751 5471;
0440   2521 C341 D901 C1AB    2B3B 2A2A D555 D594;
0450   DDDC 08C8 48C8 97A4    C7A4 9751 5571 2420;
0460   4342 EB42 4383 02BB    8083 BB12 9392 92BD;
0470   959D 95BD 4544 4444    75EE 284E 88EE EF8D;
0480   8F8A EB77 5477 5157    5555 7550 5500 EE8A;
0490   8E8A EAEE A4E4 8484    EAAB EAAA AA20 20A0;
04A0   6020 EEA8 EEA2 AEEF    4D4F 4A4B 7456 5554;
04B0   745D 555D D555 5C48    4848 C806 EEA4 E484;
04C0   8E8E 8A8A 8AEE E040    4040 4000 EE88 EE82;
04D0   8EE8 88E8 888E EE84    E484 8418 3CA5 FFBD;
04E0   0080 4040 4040 4040    6060 6060 6060 6070;
04F0   7060 6060 6060 6070    7060 4040 0000 0000;

0500   0301 0F0F 0101 0101    0000 0000 0000 0007;
0510   0F0F 0F0F 0F0F 0F0F    0F0F 8F8F 8F8F 28F8;
0520   FC7C 787C 7C10 3030    78F8 F0F8 0000 6300;
0530   6405 D125 7301 F41E    7108 3303 1532 00EE;
0540   0000 6300 6405 D125    7301 F41E 7108 3304;
0550   1546 00EE 0000 6300    6405 D125 7301 F41E;
0560   7108 3305 155A 00EE    252E 152E 252E 1542;
0570   0104 0900 0407 0002    0100 B3BF F618 77FF;
0580   7AFF 4A00 1854 23EA    6304 E3A1 157C 00EE;
0590   5848 A59E 6126 6214    159A D126 00EE 030F;
05A0   FF7F 0701 FF00 A5A4    6109 620F D121 610B;
05B0   6210 D121 1772 2592    238A 25A6 1326 2592;
05C0   238A 25A6 00EE 4747    80FF A8AB A8AE 88FF;
05D0   F080 A080 A0A0 F000    22A0 224A 22AC 2274;
05E0   22B8 228C A76C D786    4701 163A 4702 163A;
05F0   4703 163A 4704 163A    4705 163A 4706 163A;

0600   4724 1612 4725 1612    4726 1612 6DFF 163A;
0610   0000 6E00 7702 A5C8    D781 78FF 7E01 3E0D;
0620   1618 A5C9 77F4 7801    D787 7708 A5D0 D787;
0630   17FC F888 A888 A8A8    F800 6E00 7702 A5C8;
0640   D781 78FF 7E01 3E0D    1640 A5C9 7701 7801;
0650   D787 7708 A632 D787    3DFF 17FC 1816 6F00;
0660   6605 86C5 3F01 1680    15D8 0000 0000 0000;
0670   0000 BDFF A53C 1838    1078 D8D8 7810 3800;
0680   A677 7702 78FD D788    26A8 168C A677 D788;
0690   A672 77FE 7804 D785    A47E 610C 6200 252E;
06A0   6D02 FD18 1698 25C4    22A0 224A 22AC 2274;
06B0   22B8 228C 00EE 414A    AE5D BBBD BEB0 B2B4;
06C0   4C40 484D 4741 4342    B56A 292C E3C4 DF2F;
06D0   1F2F 8820 2748 6E02    26DC 1740 A4DB D786;
06E0   A6C8 D786 78FF FE18    A47E 610C 6200 252E;
06F0   7D01 3D0A 16DE 6D00    00EE A6D2 7702 780D;
```

```
0700   8570 8680 8070 8980   D781 D781 273A 78FF;
0710   7001 75FF 76FE 79FE   D782 D782 D092 D092;
0720   D562 D562 7D01 273A   A47E 610C 6200 252E;
0730   A6D2 3D05 170E 1738   1756 6E02 FE18 00EE;
0740   780A 26E0 16FA 1742   6D00 F818 26A8 8A70;
0750   8B80 7B05 00EE A47E   610C 6200 252E A76A;
0760   1762 DAB2 6E02 FE18   1756 C0C0 183C A5FF;
0770   BD24 611F 6217 D121   00EE EEAA AEA8 E8EB;
0780   4A4A 4A4B A2B2 AAA6   A230 9013 9038 7010;
0790   7640 70E0 20E0 20E0   1892 6109 6208 2568;
07A0   F00A 4001 17B0 4002   17CE 4003 17D8 17A0;
07B0   18A0 600B F055 6096   A327 F055 A329 60FA;
07C0   F055 A2CD 6000 F055   17EA 17EC 0000 A5AF;
07D0   600E F055 A661 18AA   18B2 6064 F055 A329;
07E0   6020 F055 A2CD 601A   F055 F307 3300 17EA;
07F0   00E0 1226 2748 7A07   16D6 BFBB 6F00 6031;


0800   80A5 3F00 1832 4C00   1842 4C01 1842 4C02;
0810   1842 1836 0000 6F00   604F 80A5 3F00 1832;
0820   1806 0000 A4A2 6103   6200 2556 6E02 FE18;
0830   00EE 2824 1832 2824   A4BC 610B 6206 252E;
0840   1836 2824 A48E 6108   6206 2542 1842 6AA1;
0850   A4DB D785 A677 7702   78FD D788 26A8 A677;
0860   D788 77FE 7803 A672   D785 D785 A346 6130;
0870   6200 252E 6E02 FE18   7BFF 7C01 7801 4B1B;
0880   2394 3B00 1366 26A8   2748 7A03 6E02 26E0;
0890   1740 A673 611B 620F   D121 A77A 179A 0000;
08A0   A661 6005 F055 A5AF   17B2 6003 F055 60C8;
08B0   17B8 A661 6003 F055   A327 17DA 76F6 327F;
08C0   0010 1800 FF7E C7FD   8050 35C9 A42E 6780;
08D0   0080 1000 6FFF 7F73   3800 C917 B727 A33F;
08E0   0000 94C8 FFEF FFED   C890 FEFC FF27 2930;
08F0   9058 8C12 FF7F 7F77   9180 1FE9 62D7 3B2B;
```

16. VIP Blockout

VIP Blockout is a fast action two-player game of skill, strategy, coordination, and excitement!

Two players each using their own keypad control the movement of their respective lines (one solid and one checkered).

The object is for each player to maneuver his/her line in such a manner as to avoid collision with another line while at the same time trying to cause the opponent to collide with one. As the play continues, the speed of movement increases demanding faster thought and response.

How To Play VIP Blockout

1. **DO NOT** load the CHIP-8 interpreter! The entire game listing starting at location 0000 is provided. Load game in location 0000 through 048F.

2. Turn RUN switch on.

3. Movement of each player's line is controlled by pressing 2 to move line up, 8 down, 4 left and 6 right.

4. If the program is executed in a normal manner, by flipping the toggle switch to run, the playing field is defined by a border around its perimeter. However, if key 0 on either keypad is pressed while the run switch is flipped, the border is not generated and then the lines can wrap around the screen.

5. A match consists of nine games, the winner getting the most points.

NOTES: 1. This game is programmed in color and has sound effects. It can be used with the VP590 Color board and VP595 Simple Sound board, or it will run on a standard VIP without color and sound enhancement.

2. This game requires a minimum of one VIP expansion keyboard (VP580) or two expansion keyboards for exciting "dual action". Expansion keyboards plug directly into the VP590 color graphics board or into the VP585 expansion keyboard interface. For these and other VIP accessories, contact your local computer store or:

RCA VIP Marketing
New Holland Avenue
Lancaster, PA 17604

```
0000   91BB FF01 B2B6 F8CF   A2F8 81B1 F846 A190;
0010   B4F8 1BA4 F802 B5F8   FAA5 D496 B7E2 94BC;
0020   45AF F6F6 F6F6 3244   F950 AC8F FAOF F9F0;
0030   A605 F6F6 F6F6 F9F0   A74C B38C FC0F AC0C;
0040   A3D3 301B 8FFA 0FB3   4530 4022 6912 D400;
0050   0001 0101 0100 0101   0101 0102 0100 0101;
0060   007C 7583 8BFE B4B7   BC91 EB00 D970 9905;
0070   06FA 07BE 06FA 3FF6   F6F6 2252 07FA 1FFE;
0080   FEFE F1AC 9BBC 45FA   0FAD A7F8 D0A6 93AF;
0090   8732 F327 4ABD 9EAE   8E32 A49D F6BD 8F76;
00A0   AF2E 3099 9D56 168F   5616 308E 00EC F8D0;
00B0   A693 A78D 32D9 06F2   2D32 BEF8 01A7 46F3;
00C0   5C02 FB07 32D2 1C06   F232 CEF8 01A7 06F3;
00D0   5C2C 168C FC08 AC3B   B3F8 FFA6 8756 12D4;
00E0   9BBF F8FF AF93 5F8F   32DF 2F30 E500 42B5;
00F0   42A5 D48D A787 32AC   2A27 30F5 0000 05F6;
```

```
0100   33A4  3095  0045  A398    56D4  F881  BCF8  95AC;
0110   22DC  1256  D406  B8D4    06A8  D464  0A01  E68A;
0120   F4AA  3B28  9AFC  01BA    D4F8  81BA  06FA  0FAA;
0130   0AAA  D4E6  06BF  93BE    F81B  AE2A  1AF8  005A;
0140   0EF5  3B4B  560A  FC01    5A30  404E  F63B  3C9F;
0150   562A  2AD4  0022  8652    F8F0  A707  5A87  F317;
0160   1A3A  5B12  D422  8652    F8F0  A70A  5787  F317;
0170   1A3A  6B12  D415  8522    7395  5225  45A5  86FA;
0180   0FB5  D445  E6F3  3A82    1515  D445  E6F3  3A88;
0190   D445  0730  8C45  0730    84E6  6226  45A3  3688;
01A0   D43E  88D4  E606  FA77    5607  FA77  F4FA  7756;
01B0   15D4  0000  4556  D445    E6F4  56D4  45FA  0F3A;
01C0   C407  56D4  AF22  F8D3    738F  F9F0  52E6  07D2;
01D0   56F8  FFA6  F800  7E56    D419  89AE  93BE  99EE;
01E0   F456  76E6  F4B9  5645    F256  D445  AA86  FAOF;
01F0   BAD4  3788  D43F  88D4    E663  D4E6  3FFC  6BD4;

0200   92BD  F89F  AD0D  320A    45D4  0045  FA0F  AF32;
0210   3146  FA3F  F6F6  F622    52E2  06FA  1FFE  FEFE;
0220   F1AC  12F8  D0BC  075C    9CFC  08AC  2F8F  3A26;
0230   D407  BD46  AC06  BC8C    FA07  2252  E2F8  C0BE;
0240   9CF6  F6F6  F6FA  07AD    9CFE  FEFE  FEFE  F4AE;
0250   8CF6  F6F6  F6FA  07AF    9EB7  8EA7  8DBC  F804;
0260   AC9D  5787  FC08  A72C    8C3A  619C  3273  FF01;
0270   BC30  5E1E  8EFA  E7AE    8F32  7E2F  3058  12D4;
0280   92BD  F89F  ADF8  C0BC    94AC  F8AA  5C94  BCAC;
0290   0CFB  9132  9CF8  915C    F801  5DD4  F800  5DD4;
02A0   E265  22D4  0000  0000    0000  0000  0000  0000;
02B0   0000  0000  0000  0000    0000  0000  0000  0000;
02C0   0000  0000  0000  0000    0000  0000  0000  0000;
02D0   0000  0000  0000  0000    0000  0000  0000  0000;
02E0   0000  0000  0000  0000    0000  0000  0000  0000;
02F0   0000  0000  0000  0000    0000  0280  00E0  004B;

0300   6609  6700  1486  6701    A490  6000  6100  F155;
0310   2424  6EFF  2360  2424    6C05  6170·6270  B1C0;
0320   6280  6920  3701  244C    6104  6204  6C08  633A;
0330   641A  6D02  CA01  6500    4A00  2376  4A01  23AE;
0340   3F00  13E6  236A  7501    3502  1338  2350  1336;
0350   F8F8  6E02  FE18  4902    135E  79FF  78FE  8E90;
0360   FE15  FE07  3E00  1362    00EE  3A00  1372  6A01;
0370   00EE  6A00  00EE  6B02    EBA1  1384  7B02  3B0A;
0380   1378  8BC0  8CB0  4B02    1398  4B04  139E  4B06;
0390   13A4  7100  7202  13A8    7100  72FE  13A8  71FE;
03A0   7200  13A8  7102  7200    A481  D122  00EE  6B02;
03B0   EBF5  13BC  7B02  3B0A    13B0  8BD0  8DB0  4B02;
03C0   13D0  4B04  13D6  4B06    13DC  7300  7402  13E0;
03D0   7300  74FE  13E0  73FE    7400  13E0  7302  7400;
03E0   A483  D342  00EE  6EFF    FE15  FE18  4A00  D122;
03F0   4A01  D342  FE07  3E00    13EC  A490  F165  A490;
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0400   3A00  7001  3A01  7101    F155  00E0  2424  76FF;
0410   3600  1312  6E02  FE18    6E04  FE15  FE07  3E00;
0420   141C  1414  6C04  6130    6220  B1C0  6C06  6134;
0430   6220  B1C0  A490  6110    6200  2444  A491  6128;
0440   2444  00EE  F065  F029    D125  00EE  A483  6100;
0450   6200  D121  3F00  D121    62FF  D121  7101  3F01;
0460   1450  71FF  D121  6201    6100  D121  3F00  D121;
0470   61FF  D121  7201  3F01    1468  72FF  D121  00EE;
0480   01C0  C080  40D4  E7A1    1306  E7F5  1306  1308;
0490   0000  0000  0000  0000    0000  0000  0000  0000;
04A0   0000  0000  0000  0000    0000  0000  0000  0000;
04B0   0000  0000  0000  0000    0000  0000  0000  0000;
04C0   0000  0000  0000  0000    0000  0000  0000  0000;
04D0   0000  0000  0000  0000    0000  0000  0000  0000;
04E0   0000  0000  0000  0000    0000  0000  0000  0000;
04F0   0000  0000  0000  0000    0000  0000  0000  0000
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