```
                0002 ;*************************************************
                0003 ;*                                               *
                0004 ;*              Bally Tiny Basic                 *
                0005 ;*                                               *
                0006 ;*                  8/25/79                      *
                0007 ;*                                               *
                0008 ;*************************************************
                0009 ;
(0206)          0010 L0206   EQU     0206H
(0FFF)          0011 L0FFF   EQU     0FFFH
(4000)          0012 L4000   EQU     4000H          ; Text from 4000H to 4E18H
(4050)          0013 L4050   EQU     4050H
(4DC0)          0014 L4DC0   EQU     4DC0H
(4E20)          0015 L4E20   EQU     4E20H          ; Tape insert pointer
(4E21)          0016 L4E21   EQU     4E21H          ; Tape extract pointer
(4E22)          0017 L4E22   EQU     4E22H          ; 4E22H-4E51H Tape input buffer
(4E52)          0018 TXTUNF  EQU     4E52H          ; "End of Basic Pgm" address
(4E54)          0019 L4E54   EQU     4E54H
(4E55)          0020 L4E55   EQU     4E55H          ; Key release timer (60 Hz)
(4E56)          0021 L4E56   EQU     4E56H          ; Time remaining on current note
(4E57)          0022 L4E57   EQU     4E57H          ; Time for next note
(4E58)          0023 L4E58   EQU     4E58H          ; Master sound divider value
(4E59)          0024 L4E59   EQU     4E59H          ; Next note to output
(4E5A)          0025 L4E5A   EQU     4E5AH
(4E5B)          0026 L4E5B   EQU     4E5BH
(4E5C)          0027 L4E5C   EQU     4E5CH
(4E5E)          0028 L4E5E   EQU     4E5EH
(4E60)          0029 L4E60   EQU     4E60H
(4E62)          0030 L4E62   EQU     4E62H
(4E63)          0031 L4E63   EQU     4E63H
(4E64)          0032 L4E64   EQU     4E64H
(4E66)          0033 L4E66   EQU     4E66H          ; Character Spec Table
(4E6C)          0034 L4E6C   EQU     4E6CH          ; Indexes VRBL storage area
(4E6D)          0035 L4E6D   EQU     4E6DH          ; Last calc. input
(4EA2)          0036 BKC     EQU     4EA2H          ; BC
(4EA4)          0037 FC      EQU     4EA4H          ; FC
(4EA6)          0038 NT      EQU     4EA6H          ; NT
(4EA8)          0039 CX      EQU     4EA8H          ; CX
(4EAA)          0040 CY      EQU     4EAAH          ; CY
(4EAC)          0041 XY      EQU     4EACH          ; XY
(4EAE)          0042 RM      EQU     4EAEH          ; RM
(4EB0)          0043 L4EB0   EQU     4EB0H          ; 16 digits for $
(4EB9)          0044 L4EB9   EQU     4EB9H          ; 16 digits for $
(4EC2)          0045 L4EC2   EQU     4EC2H          ; I/O flag 0=KBD in, VID out
                0046                                ;          1=TAP in, VID out
                0047                                ;          2=KBD in, TAP out
                0048                                ;          6=KBD in, TAP out
                0049                                ;                    (expanded)
(4EC3)          0050 CURRNT  EQU     4EC3H
(4EC5)          0051 STKGOS  EQU     4EC5H
(4EC7)          0052 STKINP  EQU     4EC7H          ; "NEXT" VRBL address
(4EC7)          0053 VARNXT  EQU     4EC7H
(4EC9)          0054 LOPVAR  EQU     4EC9H          ; "FOR" VRBL address
(4ECB)          0055 LOPINC  EQU     4ECBH          ; "STEP" VRBL address
(4ECD)          0056 LOPLMT  EQU     4ECDH          ; "TO" VRBL address
(4ECF)          0057 LOPLN   EQU     4ECFH          ; Line # of current FOR line
(4ED1)          0058 LOPPT   EQU     4ED1H          ; Current FOR line text pointer
```

```
(4ED4)      0059 BUFFER  EQU     4ED4H          ; Keyboard input buffer
            0060                                ;  to 4FC3H
(4F5C)      0061 STKLMT  EQU     4F5CH
(4FCE)      0062 L4FCE   EQU     4FCEH
(4FEF)      0063 STACK   EQU     4FEFH
(4FFF)      0064 L4FFF   EQU     4FFFH
(A000)      0065 TXTBGN  EQU     0A000H
(A70C)      0066 TXTEND  EQU     0A70CH
(000D)      0067 CR      EQU     0DH
(000A)      0068 LF      EQU     0AH
(0004)      0069 PORT4   EQU     4
(0005)      0070 PORT5   EQU     5
(0006)      0071 PORT6   EQU     6
(0007)      0072 PORT7   EQU     7
(000C)      0073 PORT0C  EQU     0CH
(000D)      0074 PORT0D  EQU     0DH
(000E)      0075 PORT0E  EQU     0EH
(000F)      0076 PORT0F  EQU     0FH
(0010)      0077 PORT10  EQU     10H
(0011)      0078 PORT11  EQU     11H
(0012)      0079 PORT12  EQU     12H
(0016)      0080 PORT16  EQU     16H
            0081 ;
            0082 DO      MACRO   #P1
            0083         DB      #P1            ; Subroutine #P1
            0084         MEND
            0085 ;
            0086 JTE     MACRO   #P1
            0087         DW      #P1 SHR 8      ; Jump table entry
            0088         DB      #P1 AND 0FFH
            0089         MEND
            0090 ;
            0091 TSTC    MACRO   #P1,#P2
            0092         RST     8
            0093         DB      #P1            ; Char. to check
            0094         DB      #P2-$-1        ; Jump bias if no match
            0095         MEND
            0096 ;
            0097 EXPR    MACRO
            0098         RST     10H            ; Evaluate expression
            0099         MEND
            0100 ;
            0101 OUTC    MACRO
            0102         RST     18H            ; Output Char. in A
            0103         MEND
            0104 ;
            0105 IGNBLK  MACRO
            0106         RST     20H            ; Get next non-blank from (DE)
            0107         MEND
            0108 ;
            0109 PARN    MACRO
            0110         RST     28H            ;Get value of () or storage adrs
            0111         MEND
            0112 ;
            0113 FINISH  MACRO
            0114         RST     30H            ; ; or cr, otherwise, WHAT?
            0115         MEND
```

```
                        0116 ;
9000                    0117            ORG     2000H
                        0118 ;
2000  C35424            0119            JP      CSTRT
2003  80200802          0120 L2003      DB      80H,20H,8,2     ;Masks for picture data (PX)
2007  C33E2A            0121            JP      L2A3E           ; RST 8         TSTC
200A  C37F27            0122            JP      EXXPR           ; RST 10H       EXPR
200D  C37D2C            0123            JP      L2C7D           ; RST 18H       OUTC
2010  C36A29            0124            JP      L296A           ; RST 20H       IGNBLK
2013  C38928            0125            JP      PAREN           ; RST 28H       PARN
2016  F1                0126            POP     AF              ; RST 30H       FINISH
2017  C35729            0127            JP      L2957
                        0128 ;
201A  C39D2D            0129            JP      TAPEIN
                        0130 ;
                        0131 ;          Following is moved to 4EA2H
                        0132 ;
201D  0700              0133 L201D      DW      7               ; BC preset-Black
201F  0000              0134            DW      0               ; FC preset-White
2021  0300              0135            DW      3               ; NT preset
2023  B3FF              0136 L2023      DW      -77             ; CX preset
2025  2800              0137            DW      40              ; CY preset
2027  0000              0138            DW      0               ; XY preset
                        0139 ;
2029  42414C4C          0140 L2029      DB      'BALLY BASIC',CR
      59204241
      5349430D
2035  57484154          0141 L2035      DB      'WHAT?',CR
      3F0D
203B  484F573F          0142 L203B      DB      'HOW?',CR
      0D
2040  534F5252          0143 L2040      DB      'SORRY',CR
      590D
                        0144 ;
2046  9B25              0145 L2046      DW      LIST            ; 68    LIST
2048  5C25              0146            DW      CLEAR           ; 69    CLEAR
204A  7725              0147            DW      RUN             ; 6A    RUN
204C  9D26              0148            DW      NEXT            ; 6B    NEXT
204E  D922              0149            DW      LINE            ; 6C    LINE
2050  0A27              0150            DW      IF              ; 6D    IF
2052  9025              0151            DW      GOTO            ; 6E    GOTO
2054  1426              0152            DW      GOSUB           ; 6F    GOSUB
2056  3426              0153            DW      RETURN          ; 70    RETURN
2058  2722              0154            DW      BOX             ; 71    BOX
205A  4A26              0155            DW      FOR             ; 72    FOR
205C  2327              0156            DW      INPUT           ; 73    INPUT
205E  D325              0157            DW      PRINT           ; 74    PRINT
                        0158 ;
2060  F620              0159            DW      L20F6           ; Light Pen interrupt vector
2062  B020              0160 L2062      DW      L20B0           ; Normal interrupt vector
                        0161 ;
2064  4C4953D4          0162 L2064      DM      'LIST'          ; 68
2068  434C4541          0163            DM      'CLEAR'         ; 69
      D2
206D  5255CE            0164            DM      'RUN'           ; 6A
2070  4E4558D4          0165            DM      'NEXT'          ; 6B
2074  4C494EC5          0166            DM      'LINE'          ; 6C
```

```
2078  49C6          0167          DM      'IF'            ; 6D
207A  474F54CF      0168          DM      'GOTO'          ; 6E
207E  474F5355      0169          DM      'GOSUB'         ; 6F
      C2
2083  52455455      0170          DM      'RETURN'        ; 70
      52CE
2089  424FD8        0171          DM      'BOX'           ; 71
208C  464FD2        0172          DM      'FOR'           ; 72
208F  494E5055      0173          DM      'INPUT'         ; 73
      D4
2094  5052494E      0174          DM      'PRINT'         ; 74
      D4
2099  535445D0      0175          DM      'STEP'          ; 75
209D  524EC4        0176          DM      'RND'           ; 76
20A0  54CF          0177          DM      'TO'            ; 77
                    0178 ;
                    0179 ;        Special 2-letter variables
                    0180 ;
20A2  12            0181 L20A2    DB      'R'-40H         ; RM
20A3  4D            0182          DB      'M'
20A4  18            0183          DB      'X'-40H         ; XY
20A5  59            0184          DB      'Y'
20A6  03            0185          DB      'C'-40H         ; CY
20A7  59            0186          DB      'Y'
20A8  03            0187          DB      'C'-40H         ; CX
20A9  58            0188          DB      'X'
20AA  0E            0189          DB      'N'-40H         ; NT
20AB  54            0190          DB      'T'
20AC  06            0191          DB      'F'-40H         ; FC
20AD  43            0192          DB      'C'
20AE  02            0193          DB      'B'-40H         ; BC
20AF  43            0194          DB      'C'
                    0195 ;
                    0196 ;        NORMAL INTERRUPT PROCESSOR
                    0197 ;
20B0  F5            0198 L20B0    PUSH    AF
20B1  C5            0199          PUSH    BC
20B2  D5            0200          PUSH    DE
20B3  E5            0201          PUSH    HL
20B4  21554E        0202          LD      HL,L4E55
20B7  7E            0203          LD      A,(HL)          ; Get key release timer
20B8  A7            0204          AND     A
20B9  2801          0205          JR      Z,L20BC         ; Jr if already zero
20BB  35            0206          DEC     (HL)            ; Decrement it
20BC  23            0207 L20BC    INC     HL              ; 4E56
20BD  7E            0208          LD      A,(HL)
20BE  A7            0209          AND     A
20BF  2808          0210          JR      Z,L20C9
20C1  35            0211          DEC     (HL)
20C2  201F          0212          JR      NZ,L20E3
20C4  AF            0213          XOR     A
20C5  D311          0214          OUT     (PORT11),A
20C7  1818          0215          JR      L20E1
20C9  23            0216 L20C9    INC     HL              ; 4E57
20CA  B6            0217          OR      (HL)
20CB  2816          0218          JR      Z,L20E3
20CD  2B            0219          DEC     HL              ; 4E56
```

```
20CE  77          0220         LD      (HL),A
20CF  23          0221         INC     HL              ; 4E57
20D0  3600        0222         LD      (HL),0
20D2  23          0223         INC     HL              ; 4E58
20D3  7E          0224         LD      A,(HL)
20D4  D310        0225         OUT     (PORT10),A
20D6  3647        0226         LD      (HL),47H        ; Reset master sound divider
20D8  23          0227         INC     HL              ; 4E59
20D9  7E          0228         LD      A,(HL)
20DA  D311        0229         OUT     (PORT11),A
20DC  A7          0230         AND     A
20DD  2804        0231         JR      Z,L20E3
20DF  3E0F        0232         LD      A,0FH
20E1  D316        0233 L20E1   OUT     (PORT16),A
20E3  3AA24E      0234 L20E3   LD      A,(BKC)         ; Get BC
20E6  D304        0235         OUT     (PORT4),A
20E8  D305        0236         OUT     (PORT5),A
20EA  3AA44E      0237         LD      A,(FC)          ; Get FC
20ED  D306        0238         OUT     (PORT6),A
20EF  D307        0239         OUT     (PORT7),A
20F1  E1          0240         POP     HL
20F2  D1          0241         POP     DE
20F3  C1          0242         POP     BC
20F4  1833        0243         JR      L2129
                  0244 ;
                  0245 ;*************************************************
                  0246 ;*      Light pen interrupt processor            *
                  0247 ;*************************************************
                  0248 ;
20F6  F5          0249 L20F6   PUSH    AF
20F7  D9          0250         EXX
20F8  DB12        0251         IN      A,(PORT12)      ; Collect at least 4 1s to start
20FA  1F          0252         RRA                     ; Then wait on a 0 (Start bit)
20FB  79          0253         LD      A,C             ; Collect 8 bits, then wait for
20FC  1F          0254         RRA                     ;  another start bit.
20FD  4F          0255         LD      C,A             ; Move old data to hi C
20FE  78          0256         LD      A,B
20FF  A7          0257         AND     A
2100  FA0D21      0258         JP      M,L210D         ; Minus means collecting 4 1s
2103  2011        0259         JR      NZ,L2116        ; NZ means collecting data
2105  CB79        0260         BIT     7,C             ; Else waiting on start bit
2107  201F        0261         JR      NZ,L2128        ; Leave unless start bit found
2109  0608        0262         LD      B,8             ; Now collect 8 data bits
210B  181B        0263         JR      L2128
                  0264 ;
210D  04          0265 L210D   INC     B               ; Increment 1 collector
210E  CB79        0266         BIT     7,C
2110  2016        0267         JR      NZ,L2128        ; Good if a 1
2112  06FC        0268         LD      B,0FCH          ; Else reset collector
2114  1812        0269         JR      L2128
                  0270 ;
2116  1010        0271 L2116   DJNZ    L2128           ; Leave unless 8 bits collected
2118  2A204E      0272         LD      HL,(L4E20)
211B  7D          0273         LD      A,L             ; Get insert pointer
211C  CD2C21      0274         CALL    L212C           ; Update for next
211F  BC          0275         CP      H
2120  2806        0276         JR      Z,L2128         ; Buffer is jammed; forget it!
```

```
2122  32204E      0277          LD      (L4E20),A       ; Save insert pointer
2125  264E        0278          LD      H,L4E22 SHR 8
2127  71          0279          LD      (HL),C
2128  D9          0280 L2128    EXX
2129  F1          0281 L2129    POP     AF
212A  FB          0282          EI
212B  C9          0283          RET
                  0284 ;
212C  3C          0285 L212C    INC     A
212D  FE52        0286          CP      (L4E22+48) AND 0FFH
212F  C0          0287          RET     NZ
2130  3E22        0288          LD      A,L4E22 AND 0FFH
2132  C9          0289          RET
                  0290 ;
                  0291 ;        Prepare for tape input
                  0292 ;
                  0293 ;        :INPUT, :LIST and :RUN call this routine
                  0294 ;
2133  F3          0295 L2133    DI
2134  212222      0296          LD      HL,[L4E22 AND 0FFH]+[[L4E22 AND 0FFH] SHL 8]
2137  22204E      0297          LD      (L4E20),HL
213A  D9          0298          EXX
213B  AF          0299          XOR     A
213C  32A64E      0300          LD      (NT),A          ; No notes
213F  3C          0301          INC     A
2140  32C24E      0302          LD      (L4EC2),A
2143  06FC        0303          LD      B,0FCH
2145  D9          0304          EXX
2146  3E18        0305          LD      A,18H
2148  D30E        0306          OUT     (PORT0E),A
214A  FB          0307          EI
214B              0308          IGNBLK
214B  E7          0309+         RST     20H             ; Get next non-blank from (DE)
214C  CD6521      0310          CALL    L2165
214F  C8          0311          RET     Z
2150  CD7F27      0312          CALL    EXXPR           ; Same as RST 10H
2153  D5          0313          PUSH    DE
2154  E5          0314 L2154    PUSH    HL
2155  CD9D2D      0315          CALL    TAPEIN          ; Get tape character
2158  E1          0316          POP     HL
2159  BC          0317 L2159    CP      H
215A  20F8        0318          JR      NZ,L2154
215C  E5          0319          PUSH    HL
215D  CD9D2D      0320          CALL    TAPEIN
2160  E1          0321          POP     HL
2161  BD          0322          CP      L
2162  20F5        0323          JR      NZ,L2159
2164  D1          0324          POP     DE
2165  FE3B        0325 L2165    CP      ';'
2167  C8          0326          RET     Z
2168  FE0D        0327          CP      CR
216A  C9          0328          RET
                  0329 ;
                  0330 ;        :INPUT - Load BASIC program into memory
                  0331 ;
216B  CD3321      0332 L216B    CALL    L2133
216E              0333          FINISH
```

```
216E  F7          0334+       RST     30H             ; ; or cr. otherwise, WHAT?
                  0335 ;
                  0336 ;      :LIST - List BASIC tape
                  0337 ;
216F  CD3321      0338 L216F  CALL    L2133
2172  CD9D2D      0339 L2172  CALL    TAPEIN
2175                0340        OUTC
2175  DF          0341+       RST     18H             ; Output Char. in A
2176  18FA        0342        JR      L2172
                  0343 ;
                  0344 ;      *PRINT - Print BASIC program onto printer
                  0345 ;
2178  3E06        0346 L2178  LD      A,6
217A  01          0347        DB      1               ; Skips 2 bytes
                  0348 ;
                  0349 ;      :PRINT - Print BASIC program to tape
                  0350 ;
217B  3E02        0351 L217B  LD      A,2
217D  32C24E      0352        LD      (L4EC2),A
2180                0353        FINISH
2180  F7          0354+       RST     30H             ; ; or cr. otherwise  WHAT?
                  0355 ;
                  0356 ;      :RUN - Load tape to 4000H-407FH and execute
                  0357 ;
2181  CD3321      0358 L2181  CALL    L2133
2184  210040      0359        LD      HL,L4000
2187  E5          0360        PUSH    HL
2188  E5          0361 L2188  PUSH    HL
2189  CD9D2D      0362        CALL    TAPEIN
218C  E1          0363        POP     HL
218D  77          0364        LD      (HL),A
218E  23          0365        INC     HL
218F  CB7D        0366        BIT     7,L
2191  28F5        0367        JR      Z,L2188
2193  C9          0368        RET
                  0369 ;
                  0370 ;      $ Calculator interface routine
                  0371 ;      $<sign>,<arg1>,<arg2>,<arg3>
                  0372 ;      means <arg3>=<arg1><sign><arg2>
                  0373 ;
2194                0374 DOLLAR IGNBLK                  ; Get 1st character after $
2194  E7          0375+       RST     20H             ; Get next non-blank from (DE)
2195  13          0376        INC     DE
2196  F5          0377        PUSH    AF              ; Save sign
2197  CDFB21      0378        CALL    L21FB           ; Get VRBL storage adrs.
219A  D5          0379        PUSH    DE
219B  11B04E      0380        LD      DE,L4EB0        ; Data 1 adrs.
219E  CD1822      0381        CALL    L2218           ; Insert <arg1>
21A1  D1          0382        POP     DE
21A2                0383        TSTC    2CH,L21FF       ; Comma
21A2  CF          0384+       RST     8
21A3  2C          0385+       DB      2CH             ; Char. to check
21A4  5A          0386+       DB      L21FF-$-1               ; Jump bias if no match
21A5  CDFB21      0387        CALL    L21FB           ; Get VRBL storage adrs.
21A8  F1          0388        POP     AF              ; Rearrange stack
21A9  D5          0389        PUSH    DE
21AA  11B94E      0390        LD      DE,L4EB9        ; Data 2 adrs.
```

```
21AD  F5          0391          PUSH    AF
21AE  CD1822      0392          CALL    L2218           ; Insert <arg2>
21B1  11B04E      0393          LD      DE,L4EB0        ; Data 1 adrs.
21B4  F1          0394          POP     AF              ; Regain sign
21B5  0609        0395          LD      B,9             ; 18 digits
21B7  CD0222      0396          CALL    L2202           ; Do the math
21BA  D1          0397          POP     DE              ; Get input pointer
21BB              0398          TSTC    2CH,L21FF       ; Comma
21BB  CF          0399+         RST     8
21BC  2C          0400+         DB      2CH             ; Char. to check
21BD  41          0401+         DB      L21FF-$-1               ; Jump bias if no match
21BE  CDFB21      0402          CALL    L21FB           ; Get VRBL storage adrs.
21C1  D5          0403          PUSH    DE
21C2  11B04E      0404          LD      DE,L4EB0        ; Data 1 adrs.
21C5  010012      0405          LD      BC,1200H
21C8  EB          0406 L21C8    EX      DE,HL
21C9  FF          0407          RST     38H
21CA              0408          DO      86              ; Get BCD digit
21CA  56          0409+         DB      86              ; Subroutine 86
21CB  C630        0410          ADD     A,'0'           ; Convert BCD to ASCII
21CD  EB          0411          EX      DE,HL
21CE  CDE72F      0412          CALL    L2FE7           ; Save @ (HL)
21D1  23          0413          INC     HL
21D2  23          0414          INC     HL
21D3  0C          0415          INC     C
21D4  10F2        0416          DJNZ    L21C8           ; Do 18 of them
21D6  D1          0417          POP     DE
21D7              0418          FINISH
21D7  F7          0419+         RST     30H             ; ; or cr, otherwise, WHAT?
                  0420 ;
                  0421 ;        PX - Check screen dot
                  0422 ;        PX(<expr1>,<expr2>)
                  0423 ;
21D8              0424 PX       TSTC    '(',L21FF
21D8  CF          0425+         RST     8
21D9  28          0426+         DB      '('             ; Char. to check
21DA  24          0427+         DB      L21FF-$-1               ; Jump bias if no match
21DB  C5          0428          PUSH    BC
21DC              0429          EXPR
21DC  D7          0430+         RST     10H             ; Evaluate expression
21DD  E5          0431          PUSH    HL              ; Save value of <expr1>
21DE              0432          TSTC    2CH,L21FF       ; Comma
21DE  CF          0433+         RST     8
21DF  2C          0434+         DB      2CH             ; Char. to check
21E0  1E          0435+         DB      L21FF-$-1               ; Jump bias if no match
21E1              0436          EXPR
21E1  D7          0437+         RST     10H             ; Evaluate expression
21E2              0438          TSTC    ')',L21FF
21E2  CF          0439+         RST     8
21E3  29          0440+         DB      ')'             ; Char. to check
21E4  1A          0441+         DB      L21FF-$-1               ; Jump bias if no match
21E5  C1          0442          POP     BC              ; X value
21E6  D5          0443          PUSH    DE              ; Save text pointer
21E7  55          0444          LD      D,L             ; D = Y
21E8  59          0445          LD      E,C             ; E = X
21E9  CDDF23      0446          CALL    L23DF           ; Get odd crt adrs to A
21EC  EB          0447          EX      DE,HL           ; and adrs to DE
```

```
21ED  FF          0448          RST     38H
21EE              0449          DO      92+1            ; Inc HL by A
21EE  5D          0450+         DB      92+1            ; Subroutine 92+1
21EF  0320        0451          DW      L2003           ; HL
21F1  1A          0452          LD      A,(DE)          ; Get CRT dots
21F2  A6          0453          AND     (HL)            ; AND with mask
21F3  2600        0454          LD      H,0
21F5  6C          0455          LD      L,H
21F6  D1          0456          POP     DE
21F7  C1          0457          POP     BC
21F8  C8          0458          RET     Z               ; No dot
21F9  23          0459          INC     HL
21FA  C9          0460          RET                     ; Dot on
                  0461 ;
21FB  CDD929      0462 L21FB    CALL    TSTV
21FE  D0          0463          RET     NC              ; Was a variable
21FF  C37329      0464 L21FF    JP      QWHAT
                  0465 ;
2202  FE62        0466 L2202    CP      62H             ; Multiplication sign
2204  300A        0467          JR      NC,L2210        ; JP if Mult or Divide
2206  FE2D        0468          CP      2DH
2208  2803        0469          JR      Z,L220D
220A  FF          0470          RST     38H
220B              0471          DO      98              ; Add
220B  62          0472+         DB      98              ; Subroutine 98
220C  C9          0473          RET
220D  FF          0474 L220D    RST     38H
220E              0475          DO      100             ; Subtract
220E  64          0476+         DB      100             ; Subroutine 100
220F  C9          0477          RET
2210  2003        0478 L2210    JR      NZ,L2215        ; JP if divide
2212  FF          0479          RST     38H
2213              0480          DO      102             ; Multiply
2213  66          0481+         DB      102             ; Subroutine 102
2214  C9          0482          RET
2215  FF          0483 L2215    RST     38H
2216              0484          DO      104             ; Divide
2216  68          0485+         DB      104             ; Subroutine 104
2217  C9          0486          RET
                  0487 ;
2218  EB          0488 L2218    EX      DE,HL
2219  010012      0489          LD      BC,1200H        ; 18 digits
221C  CDCF2F      0490 L221C    CALL    L2FCF           ; Get data from storage
221F  FF          0491          RST     38H
2220              0492          DO      88              ; Replace BCD digit
2220  58          0493+         DB      88              ; Subroutine 88
2221  0C          0494          INC     C               ; Next digit
2222  13          0495 L2222    INC     DE              ; Next storage location
2223  13          0496          INC     DE
2224  10F6        0497          DJNZ    L221C           ; Do 18 of them
2226  C9          0498          RET
                  0499 ;
                  0500 ;        BOX - Draw a box on the screen
                  0501 ;        BOX(<x>,<y>,<xsize>,<ysize>,<type>
                  0502 ;
2227              0503 BOX      EXPR
2227  D7          0504+         RST     10H             ; Evaluate expression
```

```
2228  E5          0505        PUSH    HL              ; Save starting x
2229              0506        TSTC    2CH,L2281       ; Comma
2229  CF          0507+       RST     8
222A  2C          0508+       DB      2CH             ; Char. to check
222B  55          0509+       DB      L2281-$-1               ; Jump bias if no match
222C              0510        EXPR
222C  D7          0511+       RST     10H             ; Evaluate expression
222D  E5          0512        PUSH    HL              ; Save starting y
222E              0513        TSTC    2CH,L2281       ; Comma
222E  CF          0514+       RST     8
222F  2C          0515+       DB      2CH             ; Char. to check
2230  50          0516+       DB      L2281-$-1               ; Jump bias if no match
2231  CDD022      0517        CALL    L22D0           ; Get Expr., Range 1-255
2234  F5          0518        PUSH    AF              ; Save xsize
2235              0519        TSTC    2CH,L2281       ; Comma
2235  CF          0520+       RST     8
2236  2C          0521+       DB      2CH             ; Char. to check
2237  49          0522+       DB      L2281-$-1               ; Jump bias if no match
2238  CDD022      0523        CALL    L22D0           ; Get Expr., Range 1-255
223B  F5          0524        PUSH    AF              ; Save ysize
223C              0525        TSTC    2CH,L2281       ; Comma
223C  CF          0526+       RST     8
223D  2C          0527+       DB      2CH             ; Char. to check
223E  42          0528+       DB      L2281-$-1               ; Jump bias if no match
223F              0529        EXPR                    ; Get box type
223F  D7          0530+       RST     10H             ; Evaluate expression
2240  D5          0531        PUSH    DE              ; Save text pointer
2241  DDE1        0532        POP     IX              ;  in IX
2243  F1          0533        POP     AF              ; Get ysize to B
2244  47          0534        LD      B,A
2245  F1          0535        POP     AF              ; Get xsize to C
2246  4F          0536        LD      C,A
2247  7D          0537        LD      A,L             ; Get box type to A
2248  E1          0538        POP     HL              ; Get start y to D
2249  55          0539        LD      D,L
224A  E1          0540        POP     HL              ; Get start x to E
224B  5D          0541        LD      E,L
224C  6F          0542        LD      L,A
224D  60          0543        LD      H,B
224E  25          0544        DEC     H
224F  CB3C        0545        SRL     H
2251  7A          0546        LD      A,D
2252  CD8422      0547        CALL    L2284
2255  84          0548        ADD     A,H
2256  FE2C        0549        CP      2CH
2258  3023        0550        JR      NC,L227D
225A  7A          0551        LD      A,D
225B  84          0552        ADD     A,H
225C  57          0553        LD      D,A
225D  61          0554        LD      H,C
225E  CB3C        0555        SRL     H
2260  7B          0556        LD      A,E
2261  CD8422      0557        CALL    L2284
2264  84          0558        ADD     A,H
2265  FE51        0559        CP      51H
2267  3014        0560        JR      NC,L227D
2269  7B          0561        LD      A,E
```

```
226A  94          0562          SUB     H
226B  5F          0563          LD      E,A
226C  7D          0564          LD      A,L
226D  E603        0565          AND     3
226F  280C        0566          JR      Z,L227D
2271  D602        0567          SUB     2
2273  F5          0568          PUSH    AF
2274  CDDF23      0569          CALL    L23DF
2277  D30C        0570          OUT     (PORT0C),A
2279  F1          0571          POP     AF
227A  CD8922      0572          CALL    L2289
227D  DDE5        0573 L227D    PUSH    IX
227F  D1          0574          POP     DE
2280              0575          FINISH
2280  F7          0576+         RST     30H             ; ; or cr, otherwise, WHAT?
                  0577 ;
2281  C37329      0578 L2281    JP      QWHAT
                  0579 ;
2284  A7          0580 L2284    AND     A
2285  F0          0581          RET     P
2286  ED44        0582          NEG
2288  C9          0583          RET
2289  5F          0584 L2289    LD      E,A
228A  79          0585          LD      A,C
228B  0F          0586          RRCA
228C  0F          0587          RRCA
228D  E63F        0588          AND     3FH
228F  3C          0589          INC     A
2290  57          0590          LD      D,A
2291  15          0591 L2291    DEC     D
2292  2807        0592          JR      Z,L229B
2294  3EAA        0593          LD      A,0AAH
2296  CDAE22      0594          CALL    L22AE
2299  18F6        0595          JR      L2291
229B  79          0596 L229B    LD      A,C
229C  E603        0597          AND     3
229E  3C          0598          INC     A
229F  4F          0599          LD      C,A
22A0  AF          0600          XOR     A
22A1  0D          0601 L22A1    DEC     C
22A2  2806        0602          JR      Z,L22AA
22A4  0F          0603          RRCA
22A5  0F          0604          RRCA
22A6  F680        0605          OR      80H
22A8  18F7        0606          JR      L22A1
22AA  CDAE22      0607 L22AA    CALL    L22AE
22AD  AF          0608          XOR     A
22AE  E5          0609 L22AE    PUSH    HL
22AF  C5          0610          PUSH    BC
22B0  32FF0F      0611          LD      (L0FFF),A
22B3  3AFF4F      0612          LD      A,(L4FFF)
22B6  4F          0613          LD      C,A
22B7  7B          0614 L22B7    LD      A,E
22B8  FE01        0615          CP      1
22BA  2002        0616          JR      NZ,L22BE
22BC  7E          0617          LD      A,(HL)
22BD  A9          0618          XOR     C
```

```
22BE  AE          0619 L22BE   XOR     (HL)
22BF  A1          0620         AND     C
22C0  AE          0621         XOR     (HL)
22C1  77          0622         LD      (HL),A
22C2  7D          0623         LD      A,L
22C3  C628        0624         ADD     A,28H
22C5  6F          0625         LD      L,A
22C6  7C          0626         LD      A,H
22C7  CE00        0627         ADC     A,0
22C9  67          0628         LD      H,A
22CA  10EB        0629         DJNZ    L22B7
22CC  C1          0630         POP     BC
22CD  E1          0631         POP     HL
22CE  23          0632         INC     HL
22CF  C9          0633         RET
                  0634 ;
22D0              0635 L22D0   EXPR
22D0  D7          0636+        RST     10H             ; Evaluate expression
22D1  7C          0637         LD      A,H
22D2  B7          0638         OR      A
22D3  203D        0639         JR      NZ,L2312        ; Jp if over 255
22D5  B5          0640         OR      L
22D6  283A        0641         JR      Z,L2312         ; Jp if = 0
22D8  C9          0642         RET
                  0643 ;
                  0644 ;       LINE - Draw a line on the screen
                  0645 ;       LINE(<x>,<y>,<type>)
                  0646 ;
22D9              0647 LINE    EXPR
22D9  D7          0648+        RST     10H             ; Evaluate expression
22DA  7D          0649         LD      A,L
22DB  F5          0650         PUSH    AF              ; Save x
22DC              0651         TSTC    2CH,L2312       ; Comma
22DC  CF          0652+        RST     8
22DD  2C          0653+        DB      2CH             ; Char. to check
22DE  33          0654+        DB      L2312-$-1               ; Jump bias if no match
22DF              0655         EXPR
22DF  D7          0656+        RST     10H             ; Evaluate expression
22E0  7D          0657         LD      A,L
22E1  F5          0658         PUSH    AF              ; Save y
22E2              0659         TSTC    2CH,L2312       ; Comma
22E2  CF          0660+        RST     8
22E3  2C          0661+        DB      2CH             ; Char. to check
22E4  2D          0662+        DB      L2312-$-1               ; Jump bias if no match
22E5              0663         EXPR
22E5  D7          0664+        RST     10H             ; Evaluate expression
22E6  44          0665         LD      B,H
22E7  4D          0666         LD      C,L
22E8  D5          0667         PUSH    DE
22E9  DDE1        0668         POP     IX
22EB  ED5BAC4E    0669         LD      DE,(XY)         ; Current xy
22EF  F1          0670         POP     AF
22F0  67          0671         LD      H,A
22F1  F1          0672         POP     AF
22F2  6F          0673         LD      L,A
22F3  CD7D23      0674         CALL    L237D
22F6  3016        0675         JR      NC,L230E        ; Jp if out of range
```

```
22F8  7C          0676         LD      A,H
22F9  CD8423      0677         CALL    L2384
22FC  3010        0678         JR      NC,L230E
22FE  22AC4E      0679         LD      (XY),HL         ; Update xy
2301  79          0680         LD      A,C
2302  E603        0681         AND     3
2304  2808        0682         JR      Z,L230E
2306  D602        0683         SUB     2
2308  325B4E      0684         LD      (L4E5B),A
230B  CD1523      0685         CALL    L2315
230E  DDE5        0686 L230E   PUSH    IX
2310  D1          0687         POP     DE
2311              0688         FINISH
2311  F7          0689+        RST     30H             ; ; or cr. otherwise, WHAT?
2312  C37A2A      0690 L2312   JP      QHOW
2315  D5          0691 L2315   PUSH    DE
2316  45          0692         LD      B,L
2317  4B          0693         LD      C,E
2318  CDBD23      0694         CALL    L23BD
231B  58          0695         LD      E,B
231C  69          0696         LD      L,C
231D  44          0697         LD      B,H
231E  4A          0698         LD      C,D
231F  CDBD23      0699         CALL    L23BD
2322  61          0700         LD      H,C
2323  50          0701         LD      D,B
2324  225E4E      0702         LD      (L4E5E),HL
2327  0E00        0703         LD      C,0
2329  7A          0704         LD      A,D
232A  BB          0705         CP      E
232B  3803        0706         JR      C,L2330
232D  53          0707         LD      D,E
232E  5F          0708         LD      E,A
232F  0C          0709         INC     C
2330  7A          0710 L2330   LD      A,D
2331  CB3F        0711         SRL     A
2333  47          0712         LD      B,A
2334  EB          0713         EX      DE,HL
2335  225C4E      0714         LD      (L4E5C),HL
2338  D1          0715         POP     DE
2339  7D          0716         LD      A,L
233A  3C          0717         INC     A
233B  F5          0718 L233B   PUSH    AF
233C  CDDF23      0719         CALL    L23DF
233F  C5          0720         PUSH    BC
2340  E5          0721         PUSH    HL
2341  4F          0722         LD      C,A
2342  0600        0723         LD      B,0
2344  210320      0724         LD      HL,L2003
2347  09          0725         ADD     HL,BC
2348  46          0726         LD      B,(HL)
2349  E1          0727         POP     HL
234A  3A5B4E      0728         LD      A,(L4E5B)
234D  FE01        0729         CP      1
234F  2002        0730         JR      NZ,L2353
2351  7E          0731         LD      A,(HL)
2352  A8          0732         XOR     B
```

```
2353  AE          0733 L2353   XOR     (HL)
2354  A0          0734         AND     B
2355  AE          0735         XOR     (HL)
2356  77          0736         LD      (HL),A
2357  C1          0737         POP     BC
2358  2A5C4E      0738         LD      HL,(L4E5C)
235B  78          0739         LD      A,B
235C  84          0740         ADD     A,H
235D  BD          0741         CP      L
235E  380D        0742         JR      C,L236D
2360  95          0743         SUB     L
2361  47          0744         LD      B,A
2362  2A5E4E      0745         LD      HL,(L4E5E)
2365  7A          0746         LD      A,D
2366  84          0747         ADD     A,H
2367  57          0748         LD      D,A
2368  7B          0749 L2368   LD      A,E
2369  85          0750         ADD     A,L
236A  5F          0751         LD      E,A
236B  180B        0752         JR      L2378
236D  47          0753 L236D   LD      B,A
236E  2A5E4E      0754         LD      HL,(L4E5E)
2371  79          0755         LD      A,C
2372  0F          0756         RRCA
2373  30F3        0757         JR      NC,L2368
2375  7A          0758         LD      A,D
2376  84          0759         ADD     A,H
2377  57          0760         LD      D,A
2378  F1          0761 L2378   POP     AF
2379  3D          0762         DEC     A
237A  20BF        0763         JR      NZ,L233B
237C  C9          0764         RET
                  0765 ;
237D  FE50        0766 L237D   CP      80              ; Check CX range
237F  D8          0767         RET     C
2380  FEB0        0768         CP      -80
2382  3F          0769         CCF
2383  C9          0770         RET
                  0771 ;
2384  FE2C        0772 L2384   CP      44              ; Check CY range
2386  D8          0773         RET     C
2387  FED4        0774         CP      -44
2389  3F          0775         CCF
238A  C9          0776         RET
                  0777 ;
238B  F5          0778 L238B   PUSH    AF
238C  3AAA4E      0779         LD      A,(CY)
238F  2F          0780         CPL
2390  C629        0781         ADD     A,29H
2392  FE51        0782         CP      51H
2394  3801        0783         JR      C,L2397
2396  AF          0784         XOR     A
2397  67          0785 L2397   LD      H,A
2398  3AA84E      0786         LD      A,(CX)
239B  C64D        0787         ADD     A,4DH
239D  FE9D        0788         CP      9DH
239F  3801        0789         JR      C,L23A2
```

```
23A1  AF          0790          XOR     A
23A2  6F          0791 L23A2    LD      L,A
23A3  F1          0792          POP     AF
23A4  C9          0793          RET
23A5  E5          0794 L23A5    PUSH    HL
23A6  7C          0795          LD      A,H
23A7  D629        0796          SUB     29H
23A9  2F          0797          CPL
23AA  6F          0798          LD      L,A
23AB  CDCD28      0799          CALL    L28CD
23AE  22AA4E      0800          LD      (CY),HL         ; Update CY
23B1  E1          0801          POP     HL
23B2  7D          0802          LD      A,L
23B3  D64D        0803          SUB     4DH
23B5  6F          0804          LD      L,A
23B6  CDCD28      0805          CALL    L28CD
23B9  22A84E      0806          LD      (CX),HL         ; Update CX
23BC  C9          0807          RET
23BD  E5          0808 L23BD    PUSH    HL
23BE  D5          0809          PUSH    DE
23BF  69          0810          LD      L,C
23C0  CDCD28      0811          CALL    L28CD
23C3  EB          0812          EX      DE,HL
23C4  68          0813          LD      L,B
23C5  CDCD28      0814          CALL    L28CD
23C8  AF          0815          XOR     A
23C9  ED52        0816          SBC     HL,DE
23CB  B4          0817          OR      H
23CC  2807        0818          JR      Z,L23D5
23CE  4F          0819          LD      C,A
23CF  7D          0820          LD      A,L
23D0  ED44        0821          NEG
23D2  47          0822          LD      B,A
23D3  1807        0823          JR      L23DC
23D5  B5          0824 L23D5    OR      L
23D6  2802        0825          JR      Z,L23DA
23D8  3E01        0826          LD      A,1
23DA  45          0827 L23DA    LD      B,L
23DB  4F          0828          LD      C,A
23DC  D1          0829 L23DC    POP     DE
23DD  E1          0830          POP     HL
23DE  C9          0831          RET
                  0832 ;
23DF  D5          0833 L23DF    PUSH    DE              ; Save XY
23E0  7A          0834          LD      A,D             ; Get y
23E1  2F          0835          CPL                     ; Reverse sense
23E2  C62C        0836          ADD     A,44            ; Make it 0-87
23E4  57          0837          LD      D,A             ; Put it back
23E5  7B          0838          LD      A,E
23E6  C650        0839          ADD     A,80            ; Same for x
23E8  5F          0840          LD      E,A
23E9  AF          0841          XOR     A
23EA  FF          0842          RST     38H
23EB              0843          DO      58              ; Get CRT adrs to DE
23EB  3A          0844+         DB      58              ; Subroutine 58
23EC  EB          0845          EX      DE,HL
23ED  D1          0846          POP     DE              ; Regain original XY
```

```
23EE  C9          0847          RET
                  0848 ;
23EF  C5          0849 KP       PUSH    BC
23F0  D5          0850          PUSH    DE
23F1  CD9D2D      0851          CALL    TAPEIN
23F4  D1          0852          POP     DE
23F5  C1          0853          POP     BC
23F6  6F          0854          LD      L,A             ; HL is output register
23F7  2600        0855          LD      H,0
23F9  C9          0856          RET
                  0857 ;
                  0858 ;        OUTPUT  &(<expr>)=
                  0859 ;
23FA              0860 L23FA    PARN
23FA  EF          0861+         RST     28H             ;Get value of () or storage adrs
23FB              0862          TSTC    '=',L2424
23FB  CF          0863+         RST     8
23FC  3D          0864+         DB      '='             ; Char. to check
23FD  26          0865+         DB      L2424-$-1               ; Jump bias if no match
23FE  E5          0866          PUSH    HL
23FF              0867          EXPR
23FF  D7          0868+         RST     10H             ; Evaluate expression
2400  7D          0869          LD      A,L
2401  E1          0870          POP     HL
2402  C5          0871          PUSH    BC
2403  44          0872          LD      B,H
2404  4D          0873          LD      C,L
2405  ED79        0874          OUT     (C),A
2407  C1          0875          POP     BC
2408              0876          FINISH
2408  F7          0877+         RST     30H             ; ; or cr. otherwise, WHAT?
                  0878 ;
                  0879 ;        INPUT   =&(<expr>)
                  0880 ;
2409              0881 L2409    PARN
2409  EF          0882+         RST     28H             ;Get value of () or storage adrs
240A  C5          0883          PUSH    BC
240B  44          0884          LD      B,H
240C  4D          0885          LD      C,L
240D  ED78        0886          IN      A,(C)
240F  6F          0887          LD      L,A
2410  2600        0888          LD      H,0
2412  C1          0889          POP     BC
2413  C9          0890          RET
                  0891 ;
2414              0892 MU       TSTC    '=',L2424
2414  CF          0893+         RST     8
2415  3D          0894+         DB      '='             ; Char. to check
2416  0D          0895+         DB      L2424-$-1               ; Jump bias if no match
2417              0896          EXPR
2417  D7          0897+         RST     10H             ; Evaluate expression
2418  7D          0898          LD      A,L
2419  CD852E      0899          CALL    L2E85
241C              0900          FINISH
241C  F7          0901+         RST     30H             ; ; or cr. otherwise, WHAT?
                  0902 ;
241D              0903 TV       TSTC    '=',L2424
```

```
241D  CF          0904+       RST     8
241E  3D          0905+       DB      '='             ; Char. to check
241F  04          0906+       DB      L2424-$-1               ; Jump bias if no match
2420              0907        EXPR
2420  D7          0908+       RST     10H             ; Evaluate expression
2421  7D          0909        LD      A,L
2422              0910        OUTC
2422  DF          0911+       RST     18H             ; Output Char. in A
2423              0912        FINISH
2423  F7          0913+       RST     30H             ; ; or cr. otherwise, WHAT?
                  0914 ;
2424  C37329      0915 L2424  JP      QWHAT
                  0916 ;
                  0917 ;      CALL <expr>
                  0918 ;
2427  213024      0919 L2427  LD      HL,L2430        ; Return address
242A  E5          0920        PUSH    HL              ; Save on stack
242B              0921        EXPR
242B  D7          0922+       RST     10H             ; Evaluate expression
242C  E9          0923        JP      (HL)            ; Go to it!
                  0924 ;
                  0925 ;      :RETURN
                  0926 ;
242D  CD3124      0927 L242D  CALL    L2431
2430              0928 L2430  FINISH
2430  F7          0929+       RST     30H             ; ; or cr. otherwise, WHAT?
                  0930 ;
                  0931 ;      Initialize interrupts
                  0932 ;
2431  DB12        0933 L2431  IN      A,(PORT12)
2433  E602        0934        AND     2
2435  20FA        0935        JR      NZ,L2431
2437  32C24E      0936        LD      (L4EC2),A
243A  3E03        0937        LD      A,3
243C  32A64E      0938        LD      (NT),A          ; Preset Note Time
243F  F3          0939        DI
2440  ED5E        0940        IM      2
2442  3E20        0941        LD      A,L2062 SHR 8   ; Interrupt Page
2444  ED47        0942        LD      I,A
2446  3E08        0943        LD      A,8             ; Only normal interrupts
2448  D30E        0944        OUT     (PORT0E),A
244A  3EC8        0945        LD      A,200
244C  D30F        0946        OUT     (PORT0F),A      ; Interrupt every 200 lines
244E  3E62        0947        LD      A,L2062 AND 0FFH        ; Interrupt vector
2450  D30D        0948        OUT     (PORT0D),A
2452  FB          0949        EI
2453  C9          0950        RET
                  0951 ;
                  0952 ;*************************
                  0953 ;*      Cold Start       *
                  0954 ;*************************
                  0955 ;
2454  AF          0956 CSTRT  XOR     A
2455  D30C        0957        OUT     (PORT0C),A
2457  67          0958        LD      H,A             ; Clear 4000H-4FFFH
2458  6F          0959        LD      L,A
2459  47          0960        LD      B,A
```

```
245A  70          0961 L245A   LD      (HL),B
245B  23          0962         INC     HL
245C  7C          0963         LD      A,H
245D  FE50        0964         CP      50H
245F  20F9        0965         JR      NZ,L245A
2461  31CE4F      0966         LD      SP,L4FCE
2464  FF          0967         RST     38H
2465              0968         DO      0               ; Start multiple Subr.
2465  00          0969+        DB      0               ; Subroutine 0
                  0970 ;
2466              0971         DO      22+1
2466  17          0972+        DB      22+1            ; Subroutine 22+1
2467  B0          0973         DB      176             ; Display height
2468  2C          0974         DB      00101100B       ; Border color 0, Left
2469  08          0975         DB      8               ; Normal interrupts
                  0976 ;
246A              0977         DO      20+1            ; Kill sound
246A  15          0978+        DB      20+1            ; Subroutine 20+1
                  0979 ;
246B              0980         DO      122+1
246B  7B          0981+        DB      122+1           ; Subroutine 122+1
246C  47          0982         DB      47H             ; LD (L4E58),47H
246D  584E        0983         DW      L4E58           ; Master sound divider value
                  0984 ;
246F              0985         DO      94+1
246F  5F          0986+        DB      94+1            ; Subroutine 94+1
2470  A24E        0987         DW      BKC             ; Move 10 bytes from
2472  0A00        0988         DW      10              ; 201DH to 4EA2H
2474  1D20        0989         DW      L201D
                  0990 ;
2476              0991         DO      94+1
2476  5F          0992+        DB      94+1            ; Subroutine 94+1
2477  664E        0993         DW      L4E66           ; Move 7 bytes from
2479  0700        0994         DW      7               ; 0206H to 4E66H
247B  0602        0995         DW      L0206
                  0996 ;
247D              0997         DO      124+1
247D  7D          0998+        DB      124+1           ; Subroutine 124+1
247E  A006        0999         DW      6A0H            ; LD (L4E66),06A0H
2480  664E        1000         DW      L4E66           ; Char spacing = 6,
                  1001                                 ; table base = A0
                  1002 ;
2482              1003         DO      124+1
2482  7D          1004+        DB      124+1           ; Subroutine 124+1
2483  04A0        1005         DW      0A004H          ; LD (TXTUNF),0A004H
2485  524E        1006         DW      TXTUNF
                  1007 ;
2487              1008         DO      2+1             ; End multiple Subr.
2487  03          1009+        DB      2+1             ; Subroutine 2+1
                  1010 ;
2488  2101A0      1011         LD      HL,TXTBGN+1
248B  3EFF        1012         LD      A,0FFH
248D  CDE72F      1013         CALL    L2FE7
2490  CD3124      1014 L2490   CALL    L2431           ; Initialize Interrupts
2493  CD7B2C      1015 ST1     CALL    CRLF
2496  112920      1016 L2496   LD      DE,L2029        ; 'BALLY BASIC<cr>'
2499  CDEA2A      1017         CALL    PRTSTG
```

```
                    1018 ;
                    1019 ;       STOP
                    1020 ;
249C  31EF4F        1021 START   LD      SP,STACK
249F  21A624        1022         LD      HL,ST2+1
24A2  22C34E        1023         LD      (CURRNT),HL
24A5  210000        1024 ST2     LD      HL,0
24A8  22C94E        1025         LD      (LOPVAR),HL
24AB  22C54E        1026         LD      (STKGOS),HL
24AE  3E3E          1027 ST3     LD      A,'>'
24B0  CDE12B        1028         CALL    GETLN
24B3  D5            1029         PUSH    DE
24B4  11D44E        1030         LD      DE,BUFFER
24B7  1A            1031         LD      A,(DE)
24B8  FE3E          1032         CP      '>'
24BA  2001          1033         JR      NZ,L24BD
24BC  13            1034         INC     DE
24BD  CD4F2A        1035 L24BD   CALL    L2A4F           ; Get possible line number
24C0                1036         IGNBLK
24C0  E7            1037+        RST     20H             ; Get next non-blank from (DE)
24C1  7C            1038         LD      A,H
24C2  B5            1039         OR      L
24C3  C1            1040         POP     BC              ; BC = end of line
24C4  284C          1041         JR      Z,EXEC          ; Direct mode if no line #
24C6  22644E        1042         LD      (L4E64),HL
24C9  1B            1043         DEC     DE              ; Put binary line number in
24CA  7C            1044         LD      A,H             ;  front of first significant
24CB  12            1045         LD      (DE),A          ;  character of line in input
24CC  1B            1046         DEC     DE              ;  buffer
24CD  7D            1047         LD      A,L
24CE  12            1048         LD      (DE),A
24CF  C5            1049         PUSH    BC              ; Line begin address
24D0  D5            1050         PUSH    DE              ; Line end address
24D1  79            1051         LD      A,C
24D2  93            1052         SUB     E
24D3  F5            1053         PUSH    AF              ; A = # bytes in line
24D4  CDB029        1054         CALL    FNDLN           ; Find this line in SAVE area
24D7  D5            1055         PUSH    DE              ; DE = adrs
24D8  2010          1056         JR      NZ,ST4          ; Jp if not found; insert
24DA  D5            1057         PUSH    DE              ; Found, delete it
24DB  CDCD29        1058         CALL    FNDNXT          ; Find next line
24DE  C1            1059         POP     BC              ; Start adrs of line to delete
24DF  2A524E        1060         LD      HL,(TXTUNF)     ; End of all text
24E2  CD812A        1061         CALL    L2A81           ; Move up to delete
24E5  60            1062         LD      H,B             ; Save new text end address
24E6  69            1063         LD      L,C
24E7  22524E        1064         LD      (TXTUNF),HL
24EA  C1            1065 ST4     POP     BC              ; Adrs of where to insert
24EB  2A524E        1066         LD      HL,(TXTUNF)     ; Text end address
24EE  F1            1067         POP     AF              ; Length of new line
24EF  E5            1068         PUSH    HL              ; Save text last adrs.
24F0  FE03          1069         CP      3               ; Length = 3, delete only
24F2  28A8          1070         JR      Z,START
24F4  85            1071         ADD     A,L             ; Compute new text end
24F5  5F            1072         LD      E,A             ;   to DE
24F6  3E00          1073         LD      A,0
24F8  8C            1074         ADC     A,H
```

```
24F9  57        1075        LD      D,A
24FA  210CA7    1076        LD      HL,TXTEND       ; Last possible address
24FD  EB        1077        EX      DE,HL
24FE  CD3A29    1078        CALL    COMP
2501  D2AA29    1079        JP      NC,QSORRY       ; SORRY if no room
2504  22524E    1080        LD      (TXTUNF),HL     ; Save new text end
2507  D1        1081        POP     DE              ; Old text end
2508  CD932A    1082        CALL    L2A93
250B  D1        1083        POP     DE              ; New line start
250C  E1        1084        POP     HL              ;          end
250D  CD812A    1085        CALL    L2A81           ; Move line to SAVE
2510  189C      1086        JR      ST3             ; Get next line
                1087 ;
2512            1088 EXEC   IGNBLK                  ; Direct Execute
2512  E7        1089+       RST     20H             ; Get next non-blank from (DE)
2513  D5        1090        PUSH    DE
2514  FE68      1091        CP      68H             ; Is this a word?
2516  3813      1092        JR      C,STVAL
2518  FE75      1093        CP      75H             ; Yes, sure?
251A  300F      1094        JR      NC,STVAL        ; No, assume implied LET
251C  07        1095        RLCA
251D  5F        1096        LD      E,A
251E  1600      1097        LD      D,0
2520  21761F    1098        LD      HL,L2046-(68H*2) ;Jump table
2523  19        1099        ADD     HL,DE
2524  5E        1100        LD      E,(HL)
2525  23        1101        INC     HL
2526  56        1102        LD      D,(HL)
2527  EB        1103        EX      DE,HL
2528  D1        1104        POP     DE
2529  13        1105        INC     DE
252A  E9        1106        JP      (HL)            ; Go to proper routine
                1107 ;
252B  CDD929    1108 STVAL  CALL    TSTV            ; Get VRBL storage address
252E  3808      1109        JR      C,L2538
2530            1110        TSTC    '=',L2538
2530  CF        1111+       RST     8
2531  3D        1112+       DB      '='             ; Char. to check
2532  05        1113+       DB      L2538-$-1               ; Jump bias if no match
2533  C1        1114        POP     BC
2534  CD4629    1115        CALL    L2946
2537            1116        FINISH
2537  F7        1117+       RST     30H             ; ; or cr. otherwise, WHAT?
2538  D1        1118 L2538  POP     DE
2539  216A2B    1119        LD      HL,TAB1-1
253C            1120 L253C  IGNBLK
253C  E7        1121+       RST     20H             ; Get next non-blank from (DE)
253D  D5        1122        PUSH    DE
253E  CDCF2F    1123 L253E  CALL    L2FCF
2541  13        1124        INC     DE
2542  23        1125        INC     HL
2543  BE        1126        CP      (HL)
2544  28F8      1127        JR      Z,L253E
2546  3E7F      1128        LD      A,7FH
2548  1B        1129        DEC     DE
2549  BE        1130        CP      (HL)
254A  3808      1131        JR      C,L2554
```

```
254C  23          1132 L254C   INC     HL
254D  BE          1133         CP      (HL)
254E  30FC        1134         JR      NC,L254C
2550  23          1135         INC     HL
2551  D1          1136         POP     DE
2552  18E8        1137         JR      L253C
2554  7E          1138 L2554   LD      A,(HL)
2555  23          1139         INC     HL
2556  6E          1140         LD      L,(HL)
2557  E67F        1141         AND     7FH
2559  67          1142         LD      H,A
255A  F1          1143         POP     AF
255B  E9          1144         JP      (HL)
                  1145 ;
255C  210040      1146 CLEAR   LD      HL,L4000
255F  01100E      1147         LD      BC,0E10H
2562  7E          1148 L2562   LD      A,(HL)
2563  E655        1149         AND     55H
2565  77          1150         LD      (HL),A
2566  23          1151         INC     HL
2567  0B          1152         DEC     BC
2568  78          1153         LD      A,B
2569  B1          1154         OR      C
256A  20F6        1155         JR      NZ,L2562
256C  D5          1156         PUSH    DE
256D  FF          1157         RST     38H
256E              1158         DO      94+1
256E  5F          1159+        DB      94+1            ; Subroutine 94+1
256F  A84E        1160         DW      CX              ; Move 6 bytes from
2571  0600        1161         DW      6               ; 2033H to 4EA8H
2573  2320        1162         DW      L2023
2575  D1          1163         POP     DE
2576              1164         FINISH
2576  F7          1165+        RST     30H             ; ; or cr, otherwise, WHAT?
                  1166 ;
2577  1100A0      1167 RUN     LD      DE,TXTBGN
257A  210000      1168 RUNNXL  LD      HL,0            ; RST30 Jumps here on cr
257D  CDB829      1169         CALL    FNDLNP          ; Find next line
2580  DA9C24      1170         JP      C,START         ; Passed end; quit
2583  EB          1171 RUNTSL  EX      DE,HL
2584  22C34E      1172         LD      (CURRNT),HL     ; Set CURRNT to line address
2587  EB          1173         EX      DE,HL
2588  13          1174         INC     DE              ; Bump past line number
2589  13          1175         INC     DE
258A  CD402E      1176 RUNSML  CALL    L2E40           ; Continue Same line execution
258D  C31225      1177         JP      EXEC            ; RST30 Jps to RUNSML on ;
                  1178 ;
2590              1179 GOTO    EXPR
2590  D7          1180+        RST     10H             ; Evaluate expression
2591  D5          1181         PUSH    DE              ; Save for error routine
2592  CDB029      1182         CALL    FNDLN           ; Find target line
2595  C27B2A      1183         JP      NZ,L2A7B        ; No such line
2598  F1          1184         POP     AF              ; Clear stack
2599  18E8        1185         JR      RUNTSL
                  1186 ;
                  1187 ;       LIST [<expr1>][,<expr2>]
                  1188 ;
```

```
259B  210000      1189 LIST    LD      HL,0            ; Preset to list from beginning
259E                1190         IGNBLK
259E  E7            1191+        RST     20H             ; Get next non-blank from (DE)
259F  CD6521        1192         CALL    L2165
25A2  2805          1193         JR      Z,L25A9         ; Jp if ; or cr
25A4  FE2C          1194         CP      ','
25A6  2801          1195         JR      Z,L25A9         ; Jp if only # lines specified
25A8                1196         EXPR
25A8  D7            1197+        RST     10H             ; Evaluate expression
25A9  E5            1198 L25A9   PUSH    HL              ; Save line # for start
25AA  21FFFF        1199         LD      HL,-1           ; Set for max number of lines
25AD                1200         TSTC    2CH,L25B1       ; Comma
25AD  CF            1201+        RST     8
25AE  2C            1202+        DB      2CH             ; Char. to check
25AF  01            1203+        DB      L25B1-$-1               ; Jump bias if no match
25B0                1204         EXPR                    ; Get number of lines
25B0  D7            1205+        RST     10H             ; Evaluate expression
25B1  D5            1206 L25B1   PUSH    DE
25B2  FDE1          1207         POP     IY
25B4  E3            1208         EX      (SP),HL
25B5  CDB029        1209         CALL    FNDLN
25B8  3815          1210 L25B8   JR      C,L25CF
25BA  E3            1211         EX      (SP),HL
25BB  7C            1212         LD      A,H
25BC  B5            1213         OR      L
25BD  2810          1214         JR      Z,L25CF
25BF  2B            1215         DEC     HL
25C0  E3            1216         EX      (SP),HL
25C1  CD582B        1217         CALL    L2B58
25C4  CDEA2A        1218         CALL    PRTSTG
25C7  CD402E        1219         CALL    L2E40
25CA  CDB829        1220         CALL    FNDLNP
25CD  18E9          1221         JR      L25B8
25CF  FDE5          1222 L25CF   PUSH    IY
25D1  D1            1223         POP     DE
25D2                1224         FINISH
25D2  F7            1225+        RST     30H             ; ; or cr. otherwise, WHAT?
                    1226 ;
25D3  0E08          1227 PRINT   LD      C,8             ; Default number of spaces
25D5                1228         TSTC    3BH,PR2         ; Semicolon
25D5  CF            1229+        RST     8
25D6  3B            1230+        DB      3BH             ; Char. to check
25D7  05            1231+        DB      PR2-$-1         ; Jump bias if no match
25D8  CD7B2C        1232         CALL    CRLF
25DB  18AD          1233         JR      RUNSML
                    1234 ;
25DD                1235 PR2     TSTC    CR,PR3
25DD  CF            1236+        RST     8
25DE  0D            1237+        DB      CR              ; Char. to check
25DF  1B            1238+        DB      PR3-$-1         ; Jump bias if no match
25E0  CD7B2C        1239         CALL    CRLF
25E3  1895          1240         JR      RUNNXL
                    1241 ;
25E5                1242 PR0     TSTC    '#',PR1
25E5  CF            1243+        RST     8
25E6  23            1244+        DB      '#'             ; Char. to check
25E7  0B            1245+        DB      PR1-$-1         ; Jump bias if no match
```

```
25E8                    1246            EXPR
25E8  D7                1247+           RST     10H             ; Evaluate expression
25E9  3EC0              1248            LD      A,0C0H          ; Limit to 6 bits
25EB  A5                1249            AND     L
25EC  B4                1250            OR      H
25ED  C27A2A            1251            JP      NZ,QHOW
25F0  4D                1252            LD      C,L
25F1  1805              1253            JR      L25F8
                        1254 ;
25F3  CDF82A            1255 PR1        CALL    QTSTG
25F6  1814              1256            JR      PR8
                        1257 ;
25F8                    1258 L25F8      TSTC    2CH,PR6
25F8  CF                1259+           RST     8
25F9  2C                1260+           DB      2CH             ; Char. to check
25FA  0D                1261+           DB      PR6-$-1         ; Jump bias if no match
                        1262 ;
25FB                    1263 PR3        TSTC    2CH,L2603
25FB  CF                1264+           RST     8
25FC  2C                1265+           DB      2CH             ; Char. to check
25FD  05                1266+           DB      L2603-$-1               ; Jump bias if no match
25FE  3E20              1267            LD      A,' '
2600                    1268            OUTC
2600  DF                1269+           RST     18H             ; Output Char. in A
2601  18F8              1270            JR      PR3
                        1271 ;
2603  CD5C29            1272 L2603      CALL    FIN
2606  18DD              1273            JR      PR0
                        1274 ;
2608  CD7B2C            1275 PR6        CALL    CRLF
260B                    1276            FINISH
260B  F7                1277+           RST     30H             ; ; or cr. otherwise, WHAT?
                        1278 ;
260C                    1279 PR8        EXPR
260C  D7                1280+           RST     10H             ; Evaluate expression
260D  C5                1281            PUSH    BC
260E  CD1B2B            1282            CALL    L2B1B           ; Print value of expression
2611  C1                1283            POP     BC
2612  18E4              1284            JR      L25F8
                        1285 ;
2614  CDC12A            1286 GOSUB      CALL    L2AC1           ; Save current "FOR" params
2617                    1287            EXPR
2617  D7                1288+           RST     10H             ; Evaluate expression
2618  D5                1289            PUSH    DE              ; Save text pointer
2619  CDB029            1290            CALL    FNDLN           ; Find target line
261C  C27B2A            1291            JP      NZ,L2A7B        ; Not present; 'HOW?'
261F  2AC34E            1292            LD      HL,(CURRNT)     ; Save everything
2622  E5                1293            PUSH    HL
2623  2AC54E            1294            LD      HL,(STKGOS)
2626  E5                1295            PUSH    HL
2627  210000            1296            LD      HL,0
262A  22C94E            1297            LD      (LOPVAR),HL     ; And load it up
262D  39                1298            ADD     HL,SP
262E  22C54E            1299            LD      (STKGOS),HL
2631  C38325            1300            JP      RUNTSL
                        1301 ;
2634  2AC54E            1302 RETURN     LD      HL,(STKGOS)     ; Old stack pointer
```

```
2637 7C          1303          LD      A,H
2638 B5          1304          OR      L
2639 CA7329      1305          JP      Z,QWHAT         ; RETURN with no GOSUB
263C F9          1306          LD      SP,HL           ; Restore old SP
263D E1          1307          POP     HL
263E 22C54E      1308          LD      (STKGOS),HL     ; And old STKGOS
2641 E1          1309          POP     HL
2642 22C34E      1310          LD      (CURRNT),HL     ; And old CURRNT
2645 D1          1311          POP     DE              ; Get old text pointer
2646 CDA52A      1312          CALL    L2AA5           ; Restore old "FOR" parms
2649             1313          FINISH
2649 F7          1314+         RST     30H             ; ; or cr. otherwise, WHAT?
                 1315 ;
264A CDC12A      1316 FOR      CALL    L2AC1           ; Save old "FOR" parms
264D CD4029      1317          CALL    SETVAL          ; Set control VRBL
2650 2B          1318          DEC     HL
2651 22C94E      1319          LD      (LOPVAR),HL
2654             1320          TSTC    77H,L2658       ; "TO" (don't need one)
2654 CF          1321+         RST     8
2655 77          1322+         DB      77H             ; Char. to check
2656 01          1323+         DB      L2658-$-1               ; Jump bias if no match
2657             1324          EXPR
2657 D7          1325+         RST     10H             ; Evaluate expression
2658 22CD4E      1326 L2658    LD      (LOPLMT),HL     ; Save limit
265B 210100      1327          LD      HL,1            ; Preset step of 1
265E             1328          TSTC    75H,FR4         ; "STEP" (don't need one)
265E CF          1329+         RST     8
265F 75          1330+         DB      75H             ; Char. to check
2660 01          1331+         DB      FR4-$-1         ; Jump bias if no match
2661             1332          EXPR
2661 D7          1333+         RST     10H             ; Evaluate expression
2662 22CB4E      1334 FR4      LD      (LOPINC),HL     ; Save increment
2665 2AC34E      1335          LD      HL,(CURRNT)
2668 22CF4E      1336          LD      (LOPLN),HL      ; Save current line number
266B EB          1337          EX      DE,HL
266C 22D14E      1338          LD      (LOPPT),HL      ; And current text pointer
266F 010A00      1339          LD      BC,10           ; Dig into stack to find
2672 2AC94E      1340          LD      HL,(LOPVAR)     ;  LOPVAR from last
2675 EB          1341          EX      DE,HL
2676 60          1342          LD      H,B
2677 68          1343          LD      L,B             ; HL = 0
2678 39          1344          ADD     HL,SP
2679 1801        1345          JR      L267C
267B 09          1346 FR7      ADD     HL,BC           ; Each level is 10 deeper
267C 7E          1347 L267C    LD      A,(HL)          ; Get old LOPVAR
267D 23          1348          INC     HL
267E B6          1349          OR      (HL)
267F 2817        1350          JR      Z,L2698         ; Jp if no more
2681 7E          1351          LD      A,(HL)
2682 2B          1352          DEC     HL
2683 BA          1353          CP      D               ; Same as this one?
2684 20F5        1354          JR      NZ,FR7
2686 7E          1355          LD      A,(HL)          ; Other half also?
2687 AB          1356          XOR     E
2688 20F1        1357          JR      NZ,FR7
268A EB          1358          EX      DE,HL           ; Yes, found one
268B 67          1359          LD      H,A
```

```
268C  6F          1360         LD      L,A
268D  39          1361         ADD     HL,SP          ; Try to move SP
268E  44          1362         LD      B,H
268F  4D          1363         LD      C,L
2690  210A00      1364         LD      HL,10
2693  19          1365         ADD     HL,DE
2694  CD932A      1366         CALL    L2A93          ; Purge 10 words
2697  F9          1367         LD      SP,HL          ; In the stack
2698  2AD14E      1368 L2698   LD      HL,(LOPPT)     ; Job done
269B  EB          1369         EX      DE,HL
269C              1370         FINISH
269C  F7          1371+        RST     30H            ; ; or cr. otherwise, WHAT?
                  1372 ;
269D  CDD929      1373 NEXT    CALL    TSTV           ; Get adrs of VRBL
26A0  DA7329      1374         JP      C,QWHAT        ; None, 'WHAT?'
26A3  22C74E      1375         LD      (STKINP),HL    ; Save its address
26A6  D5          1376 L26A6   PUSH    DE             ; Save text pointer
26A7  EB          1377         EX      DE,HL
26A8  2AC94E      1378         LD      HL,(LOPVAR)    ; Get VRBL in FOR
26AB  7C          1379         LD      A,H
26AC  B5          1380         OR      L
26AD  CA7429      1381         JP      Z,AWHAT        ; Never had one
26B0  CD3A29      1382         CALL    COMP           ; Check them for match
26B3  2809        1383         JR      Z,L26BE        ; Jp if agree
26B5  D1          1384         POP     DE             ; No agree, Purge current
26B6  CDA52A      1385         CALL    L2AA5          ; loop and pop one level
26B9  2AC74E      1386         LD      HL,(STKINP)
26BC  18E8        1387         JR      L26A6          ; Try again
26BE  EB          1388 L26BE   EX      DE,HL          ; ;Get value of VRBL to DE
26BF  CDCF2F      1389         CALL    L2FCF
26C2  6F          1390         LD      L,A
26C3  13          1391         INC     DE
26C4  CDCF2F      1392         CALL    L2FCF
26C7  67          1393         LD      H,A
26C8  EB          1394         EX      DE,HL
26C9  2ACB4E      1395         LD      HL,(LOPINC)    ; Get increment
26CC  E5          1396         PUSH    HL
26CD  7C          1397         LD      A,H
26CE  AA          1398         XOR     D
26CF  7A          1399         LD      A,D
26D0  19          1400         ADD     HL,DE          ; Add one step
26D1  FAD826      1401         JP      M,L26D8
26D4  AC          1402         XOR     H
26D5  FAFF26      1403         JP      M,L26FF
26D8  EB          1404 L26D8   EX      DE,HL
26D9  2AC94E      1405         LD      HL,(LOPVAR)
26DC  7B          1406         LD      A,E
26DD  CDE72F      1407         CALL    L2FE7
26E0  23          1408         INC     HL
26E1  7A          1409         LD      A,D
26E2  CDE72F      1410         CALL    L2FE7
26E5  2ACD4E      1411         LD      HL,(LOPLMT)
26E8  F1          1412         POP     AF
26E9  B7          1413         OR      A
26EA  F2EE26      1414         JP      P,L26EE        ; Step > 0
26ED  EB          1415         EX      DE,HL          ; Step < 0
26EE  CD3029      1416 L26EE   CALL    CKHLDE         ; Compare with limit
```

```
26F1  D1          1417          POP     DE              ; Restore text pointer
26F2  380D        1418          JR      C,NX2           ; Outside limit
26F4  2ACF4E      1419          LD      HL,(LOPLN)      ; Within limit
26F7  22C34E      1420          LD      (CURRNT),HL     ; Put LOPLN in CURRNT
26FA  2AD14E      1421          LD      HL,(LOPPT)      ;  and LOPPT
26FD  EB          1422          EX      DE,HL
26FE              1423          FINISH
26FE  F7          1424+         RST     30H             ; ; or cr. otherwise, WHAT?
                  1425 ;
26FF  E1          1426 L26FF    POP     HL
2700  D1          1427          POP     DE
2701  CDA52A      1428 NX2      CALL    L2AA5
2704              1429          FINISH
2704  F7          1430+         RST     30H             ; ; or cr. otherwise, WHAT?
                  1431 ;
                  1432 ;        .       Comment line
                  1433 ;
2705  210000      1434 L2705    LD      HL,0            ; Make it false
2708  1801        1435          JR      L270B
                  1436 ;
270A              1437 IF       EXPR
270A  D7          1438+         RST     10H             ; Evaluate expression
270B  7C          1439 L270B    LD      A,H
270C  B5          1440          OR      L
270D  C28A25      1441          JP      NZ,RUNSML       ; Jp if true
2710  CDCF29      1442          CALL    FNDSKP          ; Otherwise skip rest of line
2713  D28325      1443          JP      NC,RUNTSL       ; And run next one
2716  C39C24      1444          JP      START
                  1445 ;
2719  2AC74E      1446 LPERR    LD      HL,(STKINP)     ; Restore old SP
271C  F9          1447          LD      SP,HL
271D  E1          1448          POP     HL
271E  22C34E      1449          LD      (CURRNT),HL     ; And old CURRNT
2721  D1          1450          POP     DE              ; And old text pointer
2722  D1          1451          POP     DE
                  1452 ;
2723  D5          1453 INPUT    PUSH    DE              ; Save in case of error
2724  CDF82A      1454          CALL    QTSTG           ; Check for string
2727  1823        1455          JR      IP2             ; No
2729  CDD929      1456          CALL    TSTV            ; Yes, followed by a VRBL?
272C  3817        1457          JR      C,IP4           ; No
272E  CD5C27      1458 L272E    CALL    GETLNA          ; Yes, get input
2731  11D44E      1459          LD      DE,BUFFER
2734              1460          EXPR
2734  D7          1461+         RST     10H             ; Evaluate expression
2735  D1          1462          POP     DE
2736  EB          1463          EX      DE,HL
2737  7B          1464          LD      A,E             ; Save value in VRBL
2738  CDE72F      1465          CALL    L2FE7
273B  23          1466          INC     HL
273C  7A          1467          LD      A,D
273D  CDE72F      1468          CALL    L2FE7
2740  E1          1469          POP     HL              ; Get old CURRNT
2741  22C34E      1470          LD      (CURRNT),HL
2744  D1          1471          POP     DE              ; Old text pointer
2745  F1          1472 IP4      POP     AF              ; Purge junk
2746              1473          TSTC    2CH,IP5         ; Comma
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2746  CF          1474+       RST     8
2747  2C          1475+       DB      2CH             ; Char. to check
2748  02          1476+       DB      IP5-$-1         ; Jump bias if no match
2749  18D8        1477        JR      INPUT           ; More items
274B              1478 IP5    FINISH
274B  F7          1479+       RST     30H             ; ; or cr. otherwise, WHAT?
                  1480 ;
274C  D5          1481 IP2    PUSH    DE              ; Save for PRTSTG
274D  CDD929      1482        CALL    TSTV            ; Must be a VRBL
2750  3003        1483        JR      NC,L2755        ; OK
2752  C37329      1484        JP      QWHAT           ; 'WHAT?'
2755  43          1485 L2755  LD      B,E
2756  D1          1486        POP     DE
2757  CD112B      1487        CALL    L2B11
275A  18D2        1488        JR      L272E
                  1489 ;
275C  C1          1490 GETLNA POP     BC
275D  D5          1491        PUSH    DE              ; Save in case of error
275E  EB          1492        EX      DE,HL
275F  2AC34E      1493        LD      HL,(CURRNT)
2762  E5          1494        PUSH    HL              ; Save CURRNT
2763  212327      1495        LD      HL,INPUT
2766  22C34E      1496        LD      (CURRNT),HL
2769  210000      1497        LD      HL,0
276C  39          1498        ADD     HL,SP
276D  22C74E      1499        LD      (STKINP),HL     ; Save SP also
2770  D5          1500        PUSH    DE
2771  C5          1501        PUSH    BC
2772  3E20        1502        LD      A,20H           ; Space after VRBL
2774  C3E12B      1503        JP      GETLN
                  1504 ;
2777  1A          1505 DEFLT  LD      A,(DE)          ; End of list ?
2778  FE0D        1506        CP      CR              ; Empty line is OK
277A  28CF        1507        JR      Z,IP5
277C  C37329      1508        JP      QWHAT           ; Else 'WHAT?'
                  1509 ;
277F  CDC727      1510 EXXPR  CALL    EXPR2           ; RST10 process
2782  E5          1511        PUSH    HL              ; Save <expr2> value
2783  21CA2B      1512        LD      HL,TAB8-1
2786  C33C25      1513        JP      L253C
                  1514 ;
2789  CDB227      1515 XP11   CALL    XP18            ; RELOP >=
278C  D8          1516        RET     C               ; No, return HL=0
278D  6F          1517        LD      L,A             ; Yes, return HL=1
278E  C9          1518        RET
                  1519 ;
278F  CDB227      1520 XP12   CALL    XP18            ; RELOP #
2792  C8          1521        RET     Z               ; False
2793  6F          1522        LD      L,A             ; True
2794  C9          1523        RET
                  1524 ;
2795  CDB227      1525 XP13   CALL    XP18            ; RELOP >
2798  C8          1526        RET     Z               ; True
2799  D8          1527        RET     C               ; Also true
279A  6F          1528        LD      L,A             ; False
279B  C9          1529        RET
                  1530 ;
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```
279C  CDB227      1531 XP14   CALL   XP18          ; RELOP <=
279F  6F          1532        LD     L,A           ; Set HL = 1
27A0  C8          1533        RET    Z             ; True, return
27A1  D8          1534        RET    C
27A2  6C          1535        LD     L,H           ; Else HL = 0
27A3  C9          1536        RET
                  1537 ;
27A4  CDB227      1538 XP15   CALL   XP18          ; RELOP =
27A7  C0          1539        RET    NZ            ; False
27A8  6F          1540        LD     L,A           ; True
27A9  C9          1541        RET
                  1542 ;
27AA  CDB227      1543 XP16   CALL   XP18          ; RELOP <
27AD  D0          1544        RET    NC            ; False
27AE  6F          1545        LD     L,A           ; True
27AF  C9          1546        RET
                  1547 ;
27B0  E1          1548 XP17   POP    HL            ; Not a relop - end list 3
27B1  C9          1549        RET                  ; Return HL = <expr2>
                  1550 ;
27B2  79          1551 XP18   LD     A,C           ; Subroutine for all RELOPs
27B3  E1          1552        POP    HL            ; Reverse top of stack
27B4  C1          1553        POP    BC
27B5  E5          1554        PUSH   HL
27B6  C5          1555        PUSH   BC
27B7  4F          1556        LD     C,A
27B8  CDC727      1557        CALL   EXPR2         ; Get 2nd <expr2>
27BB  EB          1558        EX     DE,HL         ; To DE
27BC  E3          1559        EX     (SP),HL       ; 1st <expr2> in HL
27BD  CD3029      1560        CALL   CKHLDE        ; Compare
27C0  D1          1561        POP    DE            ; Restore text pointer
27C1  210000      1562        LD     HL,0
27C4  3E01        1563        LD     A,1
27C6  C9          1564        RET
                  1565 ;
27C7              1566 EXPR2  TSTC   '-',XP21
27C7  CF          1567+       RST    8
27C8  2D          1568+       DB     '-'           ; Char. to check
27C9  05          1569+       DB     XP21-$-1      ; Jump bias if no match
27CA  210000      1570        LD     HL,0          ; Fake "0-x"
27CD  1821        1571        JR     XP26
27CF              1572 XP21   TSTC   '+',XP22      ; Ignore leading +
27CF  CF          1573+       RST    8
27D0  2B          1574+       DB     '+'           ; Char. to check
27D1  00          1575+       DB     XP22-$-1      ; Jump bias if no match
27D2  CDF927      1576 XP22   CALL   EXPR3         ; 1st <expr3>
27D5              1577 XP23   TSTC   '+',XP25      ; Add?
27D5  CF          1578+       RST    8
27D6  2B          1579+       DB     '+'           ; Char. to check
27D7  15          1580+       DB     XP25-$-1      ; Jump bias if no match
27D8  E5          1581        PUSH   HL            ; Yes, save value
27D9  CDF927      1582        CALL   EXPR3         ; 2nd <expr3>
27DC  EB          1583 XP24   EX     DE,HL         ; in DE
27DD  E3          1584        EX     (SP),HL       ; 1st in HL
27DE  7C          1585        LD     A,H           ; Compare signs
27DF  AA          1586        XOR    D
27E0  7A          1587        LD     A,D
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```
27E1  19          1588          ADD     HL,DE
27E2  D1          1589          POP     DE          ; Restore text pointer
27E3  FAD527      1590          JP      M,XP23      ; Jp if signs different
27E6  AC          1591          XOR     H           ; Signs alike
27E7  F2D527      1592          JP      P,XP23      ; So is result
27EA  C37A2A      1593          JP      OHOW        ; Else we had overflow
                  1594 ;
27ED              1595 XP25     TSTC    '-',XP42    ; Subtract?
27ED  CF          1596+         RST     8
27EE  2D          1597+         DB      '-'         ; Char. to check
27EF  A0          1598+         DB      XP42-$-1            ; Jump bias if no match
27F0  E5          1599 XP26     PUSH    HL          ; Yes, save 1st <expr3>
27F1  CDF927      1600          CALL    EXPR3       ; Get 2nd <expr3>
27F4  CD1B29      1601          CALL    CHGSGN      ; Negate
27F7  18E3        1602          JR      XP24        ; And add
                  1603 ;
27F9  CD5E28      1604 EXPR3    CALL    EXPR4       ; Get first <expr4>
27FC              1605 XP31     TSTC    62H,XP34    ; multiply (x)
27FC  CF          1606+         RST     8
27FD  62          1607+         DB      62H         ; Char. to check
27FE  29          1608+         DB      XP34-$-1            ; Jump bias if no match
27FF  E5          1609          PUSH    HL          ; Yes, save 1st <expr4>
2800  CD5E28      1610          CALL    EXPR4       ; Get 2nd <expr4>
2803  0600        1611          LD      B,0         ; Clear for sign
2805  CD1829      1612          CALL    CHKSGN
2808  E3          1613          EX      (SP),HL     ; 1st on stack
2809  CD1829      1614          CALL    CHKSGN
280C  EB          1615          EX      DE,HL       ; 2nd in DE
280D  E3          1616          EX      (SP),HL     ; Get back 1st
280E  7C          1617          LD      A,H
280F  B7          1618          OR      A
2810  2806        1619          JR      Z,XP32      ; Jp if HL <255
2812  7A          1620          LD      A,D
2813  B2          1621          OR      D
2814  EB          1622          EX      DE,HL
2815  C27B2A      1623          JP      NZ,L2A7B    ; Jp if DE >255 (will overflow)
2818  7D          1624 XP32     LD      A,L
2819  210000      1625          LD      HL,0        ; Clear result
281C  B7          1626          OR      A
281D  2832        1627          JR      Z,XP35      ; Done
                  1628 ;
281F  19          1629 XP33     ADD     HL,DE
2820  DA7B2A      1630          JP      C,L2A7B     ; Overflow
2823  3D          1631          DEC     A
2824  20F9        1632          JR      NZ,XP33     ; Continue multiply
2826  1829        1633          JR      XP35        ; Finished
                  1634 ;
2828              1635 XP34     TSTC    63H,XP42    ; Divide?
2828  CF          1636+         RST     8
2829  63          1637+         DB      63H         ; Char. to check
282A  65          1638+         DB      XP42-$-1            ; Jump bias if no match
282B  E5          1639          PUSH    HL          ; Yes, save first <expr4>
282C  CD5E28      1640          CALL    EXPR4
282F  0600        1641          LD      B,0         ; Clear for sign
2831  CD1829      1642          CALL    CHKSGN      ; Check sign of second
2834  E3          1643          EX      (SP),HL
2835  CD1829      1644          CALL    CHKSGN      ; Check sign of first
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```
2838  EB          1645          EX      DE,HL
2839  E3          1646          EX      (SP),HL
283A  EB          1647          EX      DE,HL
283B  7A          1648          LD      A,D             ; Divide by 0?
283C  B3          1649          OR      E
283D  CA7B2A      1650          JP      Z,L2A7B         ; Yes, 'HOW?'
2840  C5          1651          PUSH    BC              ; Save sign
2841  CD0329      1652          CALL    DIVIDE          ; Do divide
2844  D1          1653          POP     DE
2845  C5          1654          PUSH    BC
2846  CB7A        1655          BIT     7,D
2848  C41B29      1656          CALL    NZ,CHGSGN       ; Change sign if necessary
284B  22AE4E      1657          LD      (RM),HL         ; Update RM
284E  E1          1658          POP     HL
284F  42          1659          LD      B,D
2850  4B          1660          LD      C,E
2851  D1          1661 XP35     POP     DE
2852  7C          1662          LD      A,H             ; HL must be +
2853  B7          1663          OR      A
2854  FA7A2A      1664          JP      M,QHOW          ; Else overflow
2857  78          1665          LD      A,B
2858  B7          1666          OR      A
2859  FC1B29      1667          CALL    M,CHGSGN        ; Change sign if necessary
285C  189E        1668          JR      XP31
                  1669 ;
285E  21A12B      1670 EXPR4    LD      HL,TAB4-1       ; Find function
2861  C33C25      1671          JP      L253C
                  1672 ;
2864  CDD929      1673 XP40     CALL    TSTV            ; Is it a variable? End list 2
2867  380E        1674          JR      C,XP41          ; No
2869  EB          1675          EX      DE,HL           ; Yes
286A  CDCF2F      1676          CALL    L2FCF
286D  F5          1677          PUSH    AF
286E  13          1678          INC     DE
286F  CDCF2F      1679          CALL    L2FCF
2872  EB          1680          EX      DE,HL
2873  67          1681          LD      H,A             ; Get VRBL value to HL
2874  F1          1682          POP     AF
2875  6F          1683          LD      L,A
2876  C9          1684          RET
                  1685 ;
2877  CD4F2A      1686 XP41     CALL    L2A4F           ; Is it a number
287A  78          1687          LD      A,B             ; # of digits
287B  B7          1688          OR      A
287C  C0          1689          RET     NZ
287D              1690          TSTC    '"',PAREN       ; Get one byte ASCII input
287D  CF          1691+         RST     8
287E  22          1692+         DB      '"'             ; Char. to check
287F  09          1693+         DB      PAREN-$-1               ; Jump bias if no match
2880  CDCF2F      1694          CALL    L2FCF
2883  6F          1695          LD      L,A
2884  13          1696          INC     DE
2885              1697          TSTC    '"',XP43
2885  CF          1698+         RST     8
2886  22          1699+         DB      '"'             ; Char. to check
2887  09          1700+         DB      XP43-$-1                ; Jump bias if no match
2888  C9          1701          RET
```

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                        1702 ;
                        1703 ;       RST28
                        1704 ;
2889                    1705 PAREN   TSTC    '(',XP43        ; No digit, must be (expr)
2889  CF                1706+        RST     8
288A  28                1707+        DB      '('             ; Char. to check
288B  05                1708+        DB      XP43-$-1                ; Jump bias if no match
288C                    1709         EXPR
288C  D7                1710+        RST     10H             ; Evaluate expression
288D                    1711         TSTC    ')',XP43
288D  CF                1712+        RST     8
288E  29                1713+        DB      ')'             ; Char. to check
288F  01                1714+        DB      XP43-$-1                ; Jump bias if no match
2890  C9                1715 XP42    RET
                        1716 ;
2891  C37329            1717 XP43    JP      QWHAT
                        1718 ;
2894                    1719 RND     PARN
2894  EF                1720+        RST     28H             ;Get value of () or storage adrs
2895  7C                1721         LD      A,H             ; Expression must be +
2896  B7                1722         OR      A
2897  FA7A2A            1723         JP      M,QHOW          ; Bad if -
289A  B5                1724         OR      L
289B  CA7A2A            1725         JP      Z,QHOW          ; or if 0
289E  D5                1726         PUSH    DE
289F  EB                1727         EX      DE,HL
28A0  AF                1728         XOR     A
28A1  FF                1729         RST     38H
28A2                    1730         DO      118             ; Get Random Number
28A2  76                1731+        DB      118             ; Subroutine 118
28A3  6F                1732         LD      L,A
28A4  AF                1733         XOR     A
28A5  FF                1734         RST     38H
28A6                    1735         DO      118             ; Get Random Number
28A6  76                1736+        DB      118             ; Subroutine 118
28A7  67                1737         LD      H,A
28A8  C5                1738         PUSH    BC
28A9  CD0329            1739         CALL    DIVIDE          ; RND(n)=MOD(m,n)+1
28AC  C1                1740         POP     BC
28AD  D1                1741         POP     DE
28AE  23                1742         INC     HL
28AF  C9                1743         RET
                        1744 ;
28B0                    1745 ABS     PARN
28B0  EF                1746+        RST     28H             ;Get value of () or storage adrs
28B1  1B                1747         DEC     DE
28B2  CD1829            1748         CALL    CHKSGN          ; Check sign
28B5  13                1749         INC     DE
28B6  C9                1750         RET
                        1751 ;
28B7  2A524E            1752 SZ      LD      HL,(TXTUNF)
28BA  D5                1753         PUSH    DE
28BB  EB                1754         EX      DE,HL
28BC  210CA7            1755         LD      HL,TXTEND
28BF  A7                1756         AND     A
28C0  ED52              1757         SBC     HL,DE
28C2  D1                1758         POP     DE
```

```
28C3  C9          1759          RET
                  1760 ;
28C4  3E1B        1761 KN       LD      A,1BH
28C6  CDF628      1762          CALL    L28F6
28C9  2F          1763          CPL
28CA  D680        1764          SUB     80H
28CC  6F          1765          LD      L,A
28CD  2600        1766 L28CD    LD      H,0
28CF  7D          1767          LD      A,L
28D0  A7          1768          AND     A
28D1  F0          1769          RET     P
28D2  25          1770          DEC     H
28D3  C9          1771          RET
                  1772 ;
28D4  CDF428      1773 TR       CALL    L28F4
28D7  E610        1774          AND     10H
28D9  C8          1775          RET     Z
28DA  2C          1776          INC     L
28DB  C9          1777          RET
                  1778 ;
28DC  CDF428      1779 JX       CALL    L28F4
28DF  0F          1780          RRCA
28E0  0F          1781          RRCA
28E1  0F          1782          RRCA
28E2  380E        1783          JR      C,L28F2
28E4  0F          1784          RRCA
28E5  3807        1785          JR      C,L28EE
28E7  C9          1786          RET
                  1787 ;
28E8  CDF428      1788 JY       CALL    L28F4
28EB  0F          1789          RRCA
28EC  3002        1790          JR      NC,L28F0
28EE  23          1791 L28EE    INC     HL
28EF  C9          1792          RET
28F0  0F          1793 L28F0    RRCA
28F1  D0          1794          RET     NC
28F2  2B          1795 L28F2    DEC     HL
28F3  C9          1796          RET
                  1797 ;
28F4  3E0F        1798 L28F4    LD      A,0FH
28F6  C5          1799 L28F6    PUSH    BC
28F7  F5          1800          PUSH    AF
28F8              1801          PARN
28F8  EF          1802+         RST     28H             ;Get value of () or storage adrs
28F9  F1          1803          POP     AF
28FA  85          1804          ADD     A,L
28FB  4F          1805          LD      C,A
28FC  ED78        1806          IN      A,(C)
28FE  C1          1807          POP     BC
28FF  210000      1808          LD      HL,0
2902  C9          1809          RET
                  1810 ;
2903  E5          1811 DIVIDE   PUSH    HL              ; Divide HL by DE
2904  6C          1812          LD      L,H
2905  2600        1813          LD      H,0
2907  CD0E29      1814          CALL    DV1
290A  41          1815          LD      B,C             ; Save result in B
```

```
290B  7D          1816          LD      A,L
290C  E1          1817          POP     HL
290D  67          1818          LD      H,A
290E  0EFF        1819 DV1      LD      C,-1
2910  0C          1820 DV2      INC     C
2911  A7          1821          AND     A
2912  ED52        1822          SBC     HL,DE
2914  30FA        1823          JR      NC,DV2
2916  19          1824          ADD     HL,DE
2917  C9          1825          RET
                  1826 ;
2918  7C          1827 CHKSGN   LD      A,H             ; Check sign of HL
2919  B7          1828          OR      A
291A  F0          1829          RET     P               ; Leave if +
                  1830 ;
291B  7C          1831 CHGSGN   LD      A,H             ; Change sign of HL
291C  B5          1832          OR      L
291D  C8          1833          RET     Z               ; +0 stays the same
291E  7C          1834          LD      A,H             ; Change sign
291F  F5          1835          PUSH    AF
2920  2F          1836          CPL
2921  67          1837          LD      H,A
2922  7D          1838          LD      A,L
2923  2F          1839          CPL
2924  6F          1840          LD      L,A
2925  23          1841          INC     HL
2926  F1          1842          POP     AF
2927  AC          1843          XOR     H
2928  F27A2A      1844          JP      P,QHOW
292B  78          1845          LD      A,B             ; Also flip sign of B
292C  EE80        1846          XOR     80H
292E  47          1847          LD      B,A
292F  C9          1848          RET
                  1849 ;
2930  7C          1850 CKHLDE   LD      A,H
2931  AA          1851          XOR     D
2932  F23629      1852          JP      P,CK1           ; JP if same sign
2935  EB          1853          EX      DE,HL           ; Exchange
2936  CD3A29      1854 CK1      CALL    COMP            ; Compare
2939  C9          1855          RET
                  1856 ;
293A  7C          1857 COMP     LD      A,H             ; Compare HL and DE
293B  BA          1858          CP      D               ; Z if HL = DE
293C  C0          1859          RET     NZ              ; C if HL < DE
293D  7D          1860          LD      A,L
293E  BB          1861          CP      E
293F  C9          1862          RET
                  1863 ;
2940  CDFB21      1864 SETVAL   CALL    L21FB           ; Check for VRBL
2943              1865          TSTC    '=',QWHAT
2943  CF          1866+         RST     8
2944  3D          1867+         DB      '='             ; Char. to check
2945  2D          1868+         DB      QWHAT-$-1               ; Jump bias if no match
2946  E5          1869 L2946    PUSH    HL
2947              1870          EXPR
2947  D7          1871+         RST     10H             ; Evaluate expression
2948  44          1872          LD      B,H
```

```
2949  4D          1873          LD      C,L             ; Value now in BC
294A  E1          1874          POP     HL              ; Get address
294B  F5          1875          PUSH    AF
294C  79          1876          LD      A,C
294D  CDE72F      1877          CALL    L2FE7           ; Place into VRBL
2950  23          1878          INC     HL
2951  78          1879          LD      A,B
2952  CDE72F      1880          CALL    L2FE7
2955  F1          1881          POP     AF
2956  C9          1882          RET
                  1883 ;
2957  CD5C29      1884 L2957    CALL    FIN             ; RST30 after POP AF
295A  1817        1885          JR      QWHAT
295C              1886 FIN      TSTC    3BH,FI1         ; Semicolon
295C  CF          1887+         RST     8
295D  3B          1888+         DB      3BH             ; Char. to check
295E  04          1889+         DB      FI1-$-1         ; Jump bias if no match
295F  F1          1890          POP     AF
2960  C38A25      1891          JP      RUNSML
2963              1892 FI1      TSTC    CR,FI2
2963  CF          1893+         RST     8
2964  0D          1894+         DB      CR              ; Char. to check
2965  66          1895+         DB      FI2-$-1         ; Jump bias if no match
2966  F1          1896          POP     AF
2967  C37A25      1897          JP      RUNNXL
                  1898 ;
296A  CDCF2F      1899 L296A    CALL    L2FCF           ; RST"0
296D  FE20        1900          CP      20H
296F  C0          1901          RET     NZ
2970  13          1902          INC     DE
2971  18F7        1903          JR      L296A
                  1904 ;
2973  D5          1905 QWHAT    PUSH    DE
2974  113520      1906 AWHAT    LD      DE,L2035
2977  CD7B2C      1907 ERROR    CALL    CRLF
297A  CDEA2A      1908          CALL    PRTSTG
297D  2AC34E      1909          LD      HL,(CURRNT)     ; Current line pointer
2980  E5          1910          PUSH    HL              ; Save it
2981  EB          1911          EX      DE,HL
2982  CDCF2F      1912          CALL    L2FCF           ; Get character in text
2985  67          1913          LD      H,A
2986  13          1914          INC     DE
2987  CDCF2F      1915          CALL    L2FCF
298A  B4          1916          OR      H
298B  EB          1917          EX      DE,HL
298C  D1          1918          POP     DE              ; Set DE to line #
298D  CA9624      1919          JP      Z,L2496         ; If 0, just restart
2990  EB          1920          EX      DE,HL           ; Get first digit
2991  CDCF2F      1921          CALL    L2FCF
2994  EB          1922          EX      DE,HL
2995  B7          1923          OR      A
2996  FA1927      1924          JP      M,LPERR         ; If negative, redo input
2999  CD582B      1925          CALL    L2B58
299C  C1          1926          POP     BC
299D  41          1927          LD      B,C
299E  CD112B      1928          CALL    L2B11
29A1  3E3F        1929          LD      A,'?'
```

```
29A3                1930          OUTC
29A3  DF            1931+         RST     18H             ; Output Char. in A
29A4  CDEA2A        1932          CALL    PRTSTG
29A7  C39624        1933          JP      L2496
                    1934 ;
29AA  D5            1935 QSORRY   PUSH    DE
29AB  114020        1936 ASORRY   LD      DE,L2040
29AE  18C7          1937          JR      ERROR
                    1938 ;
29B0  7C            1939 FNDLN    LD      A,H             ; Check sign of HL
29B1  B7            1940          OR      A
29B2  FA7A2A        1941          JP      M,QHOW          ; Cannot be -
29B5  1100A0        1942          LD      DE,TXTBGN
29B8  13            1943 FNDLNP   INC     DE
29B9  CDCF2F        1944          CALL    L2FCF
29BC  4F            1945          LD      C,A
29BD  1B            1946          DEC     DE
29BE  87            1947          ADD     A,A
29BF  D8            1948          RET     C
29C0  CDCF2F        1949          CALL    L2FCF
29C3  95            1950          SUB     L
29C4  47            1951          LD      B,A
29C5  13            1952          INC     DE
29C6  79            1953          LD      A,C
29C7  9C            1954          SBC     A,H
29C8  3804          1955          JR      C,FL2
29CA  1B            1956          DEC     DE
29CB  B0            1957          OR      B
29CC  C9            1958 FI2      RET
                    1959 ;
29CD  13            1960 FNDNXT   INC     DE              ; Find next line
                    1961 ;
29CE  13            1962 FL2      INC     DE
                    1963 ;
29CF  CDCF2F        1964 FNDSKP   CALL    L2FCF           ; Try to find cr
29D2  FE0D          1965          CP      CR
29D4  20F8          1966          JR      NZ,FL2
29D6  13            1967          INC     DE
29D7  18DF          1968          JR      FNDLNP
                    1969 ;
29D9                1970 TSTV     IGNBLK
29D9  E7            1971+         RST     20H             ; Get next non-blank from (DE)
29DA  FE25          1972          CP      25H
29DC  281D          1973          JR      Z,L29FB
29DE  D640          1974          SUB     40H
29E0  D8            1975          RET     C
29E1  201C          1976          JR      NZ,TV1
29E3  13            1977          INC     DE
29E4                1978          PARN
29E4  EF            1979+         RST     28H             ;Get value of () or storage adrs
29E5  29            1980          ADD     HL,HL
29E6  DA7A2A        1981          JP      C,QHOW
29E9  D5            1982          PUSH    DE
29EA  EB            1983          EX      DE,HL
29EB  CDB728        1984          CALL    SZ
29EE  CD3A29        1985          CALL    COMP
29F1  38B8          1986          JR      C,ASORRY
```

```
29F3  2A524E        1987          LD      HL,(TXTUNF)
29F6  2B            1988          DEC     HL
29F7  2B            1989          DEC     HL
29F8  19            1990          ADD     HL,DE
29F9  D1            1991          POP     DE
29FA  C9            1992          RET
29FB  13            1993 L29FB    INC     DE
29FC                1994          PARN
29FC  EF            1995+         RST     28H             ;Get value of () or storage adrs
29FD  AF            1996          XOR     A
29FE  C9            1997          RET
29FF  FE1B          1998 TV1      CP      1BH
2A01  3F            1999          CCF
2A02  D8            2000          RET     C
2A03  13            2001          INC     DE
2A04  6F            2002          LD      L,A
2A05  CDCF2F        2003          CALL    L2FCF
2A08  FE41          2004          CP      'A'
2A0A  3826          2005          JR      C,L2A32
2A0C  FE5B          2006          CP      'Z'+1
2A0E  3022          2007          JR      NC,L2A32
2A10  C5            2008          PUSH    BC
2A11  D5            2009          PUSH    DE
2A12  67            2010          LD      H,A
2A13  0607          2011          LD      B,7
2A15  11A220        2012          LD      DE,L20A2
2A18  1A            2013 L2A18    LD      A,(DE)
2A19  13            2014          INC     DE
2A1A  BD            2015          CP      L
2A1B  1A            2016          LD      A,(DE)
2A1C  13            2017          INC     DE
2A1D  200B          2018          JR      NZ,L2A2A
2A1F  BC            2019          CP      H
2A20  2008          2020          JR      NZ,L2A2A
2A22  78            2021          LD      A,B
2A23  C61A          2022          ADD     A,1AH
2A25  6F            2023          LD      L,A
2A26  D1            2024          POP     DE
2A27  13            2025          INC     DE
2A28  1807          2026          JR      L2A31
2A2A  10EC          2027 L2A2A    DJNZ    L2A18
2A2C  D1            2028          POP     DE
2A2D  C1            2029          POP     BC
2A2E  1B            2030          DEC     DE
2A2F  37            2031          SCF
2A30  C9            2032          RET
2A31  C1            2033 L2A31    POP     BC
2A32  7D            2034 L2A32    LD      A,L
2A33  216C4E        2035          LD      HL,L4E6C
2A36  07            2036          RLCA
2A37  85            2037          ADD     A,L
2A38  6F            2038          LD      L,A
2A39  3E00          2039          LD      A,0
2A3B  8C            2040          ADC     A,H
2A3C  67            2041          LD      H,A
2A3D  C9            2042          RET
                    2043 ;*****************************************
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                    2044 ;       RST8    TSTC                    *
                    2045 ;*****************************************
2A3E  E3            2046 L2A3E   EX      (SP),HL         ; Get (caller+1)
2A3F                2047         IGNBLK                  ; Next input character
2A3F  E7            2048+        RST     20H             ; Get next non-blank from (DE)
2A40  BE            2049         CP      (HL)            ; Same?
2A41  23            2050         INC     HL              ; Next location
2A42  2807          2051         JR      Z,L2A4B         ; Match!
2A44  C5            2052         PUSH    BC
2A45  4E            2053         LD      C,(HL)          ; Get # of bytes to skip
2A46  0600          2054         LD      B,0
2A48  09            2055         ADD     HL,BC           ; Increment past
2A49  C1            2056         POP     BC
2A4A  1B            2057         DEC     DE              ; Stay stuck on non-match
2A4B  13            2058 L2A4B   INC     DE              ; Next char.
2A4C  23            2059         INC     HL              ; Bump past # bytes
2A4D  E3            2060         EX      (SP),HL         ; Put return back on stack
2A4E  C9            2061         RET
                    2062 ;
2A4F  210000        2063 L2A4F   LD      HL,0
2A52  44            2064         LD      B,H
2A53                2065         IGNBLK
2A53  E7            2066+        RST     20H             ; Get next non-blank from (DE)
2A54  FE30          2067 L2A54   CP      '0'
2A56  D8            2068         RET     C
2A57  FE3A          2069         CP      ':'
2A59  D0            2070         RET     NC
2A5A  3EF0          2071         LD      A,0F0H
2A5C  A4            2072         AND     H
2A5D  201B          2073         JR      NZ,QHOW
2A5F  04            2074         INC     B
2A60  C5            2075         PUSH    BC
2A61  44            2076         LD      B,H
2A62  4D            2077         LD      C,L
2A63  29            2078         ADD     HL,HL
2A64  29            2079         ADD     HL,HL
2A65  09            2080         ADD     HL,BC
2A66  29            2081         ADD     HL,HL
2A67  CDCF2F        2082         CALL    L2FCF
2A6A  13            2083         INC     DE
2A6B  E60F          2084         AND     0FH
2A6D  85            2085         ADD     A,L
2A6E  6F            2086         LD      L,A
2A6F  3E00          2087         LD      A,0
2A71  8C            2088         ADC     A,H
2A72  67            2089         LD      H,A
2A73  C1            2090         POP     BC
2A74  CDCF2F        2091         CALL    L2FCF
2A77  F2542A        2092         JP      P,L2A54
2A7A  D5            2093 QHOW    PUSH    DE
2A7B  113B20        2094 L2A7B   LD      DE,L203B
2A7E  C37729        2095         JP      ERROR
                    2096 ;
2A81  CD3A29        2097 L2A81   CALL    COMP
2A84  C8            2098         RET     Z
2A85  CDCF2F        2099         CALL    L2FCF
2A88  E5            2100         PUSH    HL
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```
2A89  60          2101          LD      H,B
2A8A  69          2102          LD      L,C
2A8B  CDE72F      2103          CALL    L2FE7
2A8E  E1          2104          POP     HL
2A8F  13          2105          INC     DE
2A90  03          2106          INC     BC
2A91  18EE        2107          JR      L2A81
                  2108 ;
2A93  78          2109 L2A93    LD      A,B
2A94  92          2110          SUB     D
2A95  C29B2A      2111          JP      NZ,L2A9B
2A98  79          2112          LD      A,C
2A99  93          2113          SUB     E
2A9A  C8          2114          RET     Z
2A9B  1B          2115 L2A9B    DEC     DE
2A9C  2B          2116          DEC     HL
2A9D  CDCF2F      2117          CALL    L2FCF
2AA0  CDE72F      2118          CALL    L2FE7
2AA3  18EE        2119          JR      L2A93
                  2120 ;
2AA5  C1          2121 L2AA5    POP     BC
2AA6  E1          2122          POP     HL
2AA7  22C94E      2123          LD      (LOPVAR),HL
2AAA  7C          2124          LD      A,H
2AAB  B5          2125          OR      L
2AAC  CABF2A      2126          JP      Z,L2ABF
2AAF  E1          2127          POP     HL
2AB0  22CB4E      2128          LD      (LOPINC),HL
2AB3  E1          2129          POP     HL
2AB4  22CD4E      2130          LD      (LOPLMT),HL
2AB7  E1          2131          POP     HL
2AB8  22CF4E      2132          LD      (LOPLN),HL
2ABB  E1          2133          POP     HL
2ABC  22D14E      2134          LD      (LOPPT),HL
2ABF  C5          2135 L2ABF    PUSH    BC
2AC0  C9          2136          RET
                  2137 ;
2AC1  215C4F      2138 L2AC1    LD      HL,STKLMT
2AC4  CD1B29      2139          CALL    CHGSGN
2AC7  C1          2140          POP     BC
2AC8  39          2141          ADD     HL,SP
2AC9  D2AA29      2142          JP      NC,QSORRY
2ACC  2AC94E      2143          LD      HL,(LOPVAR)
2ACF  7C          2144          LD      A,H
2AD0  B5          2145          OR      L
2AD1  CAE72A      2146          JP      Z,L2AE7
2AD4  2AD14E      2147          LD      HL,(LOPPT)
2AD7  E5          2148          PUSH    HL
2AD8  2ACF4E      2149          LD      HL,(LOPLN)
2ADB  E5          2150          PUSH    HL
2ADC  2ACD4E      2151          LD      HL,(LOPLMT)
2ADF  E5          2152          PUSH    HL
2AE0  2ACB4E      2153          LD      HL,(LOPINC)
2AE3  E5          2154          PUSH    HL
2AE4  2AC94E      2155          LD      HL,(LOPVAR)
2AE7  E5          2156 L2AE7    PUSH    HL
2AE8  C5          2157          PUSH    BC
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2AE9  C9          2158         RET
                  2159 ;
2AEA  97          2160 PRTSTG  SUB     A
2AEB  47          2161 L2AEB   LD      B,A
2AEC  CDCF2F      2162 L2AEC   CALL    L2FCF
2AEF  13          2163         INC     DE
2AF0  B8          2164         CP      B
2AF1  C8          2165         RET     Z
2AF2              2166         OUTC
2AF2  DF          2167+        RST     18H             ; Output Char. in A
2AF3  FE0D        2168         CP      CR
2AF5  20F5        2169         JR      NZ,L2AEC
2AF7  C9          2170         RET
2AF8              2171 QTSTG   TSTC    '"',QT3
2AF8  CF          2172+        RST     8
2AF9  22          2173+        DB      '"'             ; Char. to check
2AFA  0E          2174+        DB      QT3-$-1         ; Jump bias if no match
2AFB  3E22        2175         LD      A,'"'
2AFD  CDEB2A      2176 L2AFD   CALL    L2AEB
2B00  FE0D        2177         CP      CR
2B02  E1          2178         POP     HL
2B03  CA7A25      2179         JP      Z,RUNNXL
2B06  23          2180         INC     HL
2B07  23          2181         INC     HL
2B08  E9          2182         JP      (HL)
2B09              2183 QT3     TSTC    '''',L2B10
2B09  CF          2184+        RST     8
2B0A  27          2185+        DB      ''''            ; Char. to check
2B0B  04          2186+        DB      L2B10-$-1               ; Jump bias if no match
2B0C  3E27        2187         LD      A,''''
2B0E  18ED        2188         JR      L2AFD
2B10  C9          2189 L2B10   RET
                  2190 ;
2B11  7B          2191 L2B11   LD      A,E
2B12  B8          2192         CP      B
2B13  C8          2193         RET     Z
2B14  CDCF2F      2194         CALL    L2FCF
2B17              2195         OUTC
2B17  DF          2196+        RST     18H             ; Output Char. in A
2B18  13          2197         INC     DE
2B19  18F6        2198         JR      L2B11
                  2199 ;
2B1B  0600        2200 L2B1B   LD      B,0
2B1D  CD1829      2201         CALL    CHKSGN
2B20  F2262B      2202         JP      P,L2B26
2B23  062D        2203         LD      B,'-'
2B25  0D          2204         DEC     C
2B26  D5          2205 L2B26   PUSH    DE
2B27  110A00      2206         LD      DE,10
2B2A  D5          2207         PUSH    DE
2B2B  0D          2208         DEC     C
2B2C  C5          2209         PUSH    BC
2B2D  CD0329      2210 L2B2D   CALL    DIVIDE
2B30  78          2211         LD      A,B
2B31  B1          2212         OR      C
2B32  CA3C2B      2213         JP      Z,L2B3C
2B35  E3          2214         EX      (SP),HL
```

```
2B36  2D          2215          DEC     L
2B37  E5          2216          PUSH    HL
2B38  60          2217          LD      H,B
2B39  69          2218          LD      L,C
2B3A  18F1        2219          JR      L2B2D
2B3C  C1          2220 L2B3C    POP     BC
2B3D  0D          2221 L2B3D    DEC     C
2B3E  79          2222          LD      A,C
2B3F  B7          2223          OR      A
2B40  FA482B      2224          JP      M,L2B48
2B43  3E20        2225          LD      A,' '
2B45              2226          OUTC
2B45  DF          2227+         RST     18H             ; Output Char. in A
2B46  18F5        2228          JR      L2B3D
2B48  78          2229 L2B48    LD      A,B
2B49  B7          2230          OR      A
2B4A  C47D2C      2231          CALL    NZ,L2C7D
2B4D  5D          2232          LD      E,L
2B4E  7B          2233 L2B4E    LD      A,E
2B4F  FE0A        2234          CP      LF
2B51  D1          2235          POP     DE
2B52  C8          2236          RET     Z
2B53  C630        2237          ADD     A,'0'
2B55              2238          OUTC
2B55  DF          2239+         RST     18H             ; Output Char. in A
2B56  18F6        2240          JR      L2B4E
                  2241 ;
2B58  CDCF2F      2242 L2B58    CALL    L2FCF
2B5B  6F          2243          LD      L,A
2B5C  13          2244          INC     DE
2B5D  CDCF2F      2245          CALL    L2FCF
2B60  67          2246          LD      H,A
2B61  13          2247          INC     DE
2B62  0E04        2248          LD      C,4
2B64  CD1B2B      2249          CALL    L2B1B
2B67  3E20        2250          LD      A,' '
2B69              2251          OUTC
2B69  DF          2252+         RST     18H             ; Output Char. in A
2B6A  C9          2253          RET
                  2254 ;
2B6B  5456        2255 TAB1     DB      'TV'
2B6D              2256          JTE     TV
2B6D  A4          2257+         DM      TV SHR 8        ; Jump table entry
2B6E  1D          2258+         DB      TV AND 0FFH
2B6F  4D55        2259          DB      'MU'
2B71              2260          JTE     MU
2B71  A4          2261+         DM      MU SHR 8        ; Jump table entry
2B72  14          2262+         DB      MU AND 0FFH
2B73  26          2263          DB      '&'
2B74              2264          JTE     L23FA
2B74  A3          2265+         DM      L23FA SHR 8     ; Jump table entry
2B75  FA          2266+         DB      L23FA AND 0FFH
2B76  43414C4C    2267          DB      'CALL'
2B7A              2268          JTE     L2427
2B7A  A4          2269+         DM      L2427 SHR 8     ; Jump table entry
2B7B  27          2270+         DB      L2427 AND 0FFH
2B7C  2E          2271          DB      '.'
```

```
2B7D                    2272            JTE     L2705
2B7D  A7                2273+           DM      L2705 SHR 8     ; Jump table entry
2B7E  05                2274+           DB      L2705 AND 0FFH
2B7F  24                2275            DB      '$'
2B80                    2276            JTE     DOLLAR
2B80  A1                2277+           DM      DOLLAR SHR 8    ; Jump table entry
2B81  94                2278+           DB      DOLLAR AND 0FFH
2B82  3A68              2279            DB      ':',68H         ; :LIST
2B84                    2280            JTE     L216F
2B84  A1                2281+           DM      L216F SHR 8     ; Jump table entry
2B85  6F                2282+           DB      L216F AND 0FFH
2B86  3A74              2283            DB      ':',74H         ; :PRINT
2B88                    2284            JTE     L217B
2B88  A1                2285+           DM      L217B SHR 8     ; Jump table entry
2B89  7B                2286+           DB      L217B AND 0FFH
2B8A  3A73              2287            DB      ':',73H         ; :INPUT
2B8C                    2288            JTE     L216B
2B8C  A1                2289+           DM      L216B SHR 8     ; Jump table entry
2B8D  6B                2290+           DB      L216B AND 0FFH
2B8E  3A6A              2291            DB      ':',6AH         ; :RUN
2B90                    2292            JTE     L2181
2B90  A1                2293+           DM      L2181 SHR 8     ; Jump table entry
2B91  81                2294+           DB      L2181 AND 0FFH
2B92  3A70              2295            DB      ':',70H         ; :RETURN
2B94                    2296            JTE     L242D
2B94  A4                2297+           DM      L242D SHR 8     ; Jump table entry
2B95  2D                2298+           DB      L242D AND 0FFH
2B96  2A74              2299            DB      '*',74H         ; *PRINT
2B98                    2300            JTE     L2178
2B98  A1                2301+           DM      L2178 SHR 8     ; Jump table entry
2B99  78                2302+           DB      L2178 AND 0FFH
2B9A  53544F50          2303            DB      'STOP'
2B9E                    2304            JTE     START
2B9E  A4                2305+           DM      START SHR 8     ; Jump table entry
2B9F  9C                2306+           DB      START AND 0FFH
2BA0                    2307            JTE     DEFLT           ; End list 1
2BA0  A7                2308+           DM      DEFLT SHR 8     ; Jump table entry
2BA1  77                2309+           DB      DEFLT AND 0FFH
                        2310 ;
                        2311 ;          FUNCTIONS
                        2312 ;
2BA2  76                2313 TAB4       DB      76H             ; RND
2BA3                    2314            JTE     RND
2BA3  A8                2315+           DM      RND SHR 8       ; Jump table entry
2BA4  94                2316+           DB      RND AND 0FFH
2BA5  4B4E              2317            DB      'KN'
2BA7                    2318            JTE     KN
2BA7  A8                2319+           DM      KN SHR 8        ; Jump table entry
2BA8  C4                2320+           DB      KN AND 0FFH
2BA9  5452              2321            DB      'TR'
2BAB                    2322            JTE     TR
2BAB  A8                2323+           DM      TR SHR 8        ; Jump table entry
2BAC  D4                2324+           DB      TR AND 0FFH
2BAD  4A58              2325            DB      'JX'
2BAF                    2326            JTE     JX
2BAF  A8                2327+           DM      JX SHR 8        ; Jump table entry
2BB0  DC                2328+           DB      JX AND 0FFH
```

```
2BB1  4A59          2329          DB      'JY'
2BB3                2330          JTE     JY
2BB3  A8            2331+         DM      JY SHR 8        ; Jump table entry
2BB4  E8            2332+         DB      JY AND 0FFH
2BB5  4B50          2333          DB      'KP'
2BB7                2334          JTE     KP
2BB7  A3            2335+         DM      KP SHR 8        ; Jump table entry
2BB8  EF            2336+         DB      KP AND 0FFH
2BB9  5058          2337          DB      'PX'
2BBB                2338          JTE     PX
2BBB  A1            2339+         DM      PX SHR 8        ; Jump table entry
2BBC  D8            2340+         DB      PX AND 0FFH
2BBD  26            2341          DB      '&'
2BBE                2342          JTE     L2409
2BBE  A4            2343+         DM      L2409 SHR 8     ; Jump table entry
2BBF  09            2344+         DB      L2409 AND 0FFH
2BC0  414253        2345          DB      'ABS'
2BC3                2346          JTE     ABS
2BC3  A8            2347+         DM      ABS SHR 8       ; Jump table entry
2BC4  B0            2348+         DB      ABS AND 0FFH
2BC5  535A          2349          DB      'SZ'
2BC7                2350          JTE     SZ
2BC7  A8            2351+         DM      SZ SHR 8        ; Jump table entry
2BC8  B7            2352+         DB      SZ AND 0FFH
2BC9                2353          JTE     XP40            ; End list 2
2BC9  A8            2354+         DM      XP40 SHR 8      ; Jump table entry
2BCA  64            2355+         DB      XP40 AND 0FFH
                    2356 ;
2BCB  3E3D          2357 TAB8     DB      '>='
2BCD                2358          JTE     XP11
2BCD  A7            2359+         DM      XP11 SHR 8      ; Jump table entry
2BCE  89            2360+         DB      XP11 AND 0FFH
2BCF  23            2361          DB      '#'
2BD0                2362          JTE     XP12
2BD0  A7            2363+         DM      XP12 SHR 8      ; Jump table entry
2BD1  8F            2364+         DB      XP12 AND 0FFH
2BD2  3E            2365          DB      '>'
2BD3                2366          JTE     XP13
2BD3  A7            2367+         DM      XP13 SHR 8      ; Jump table entry
2BD4  95            2368+         DB      XP13 AND 0FFH
2BD5  3D            2369          DB      '='
2BD6                2370          JTE     XP15
2BD6  A7            2371+         DM      XP15 SHR 8      ; Jump table entry
2BD7  A4            2372+         DB      XP15 AND 0FFH
2BD8  3C3D          2373          DB      '<='
2BDA                2374          JTE     XP14
2BDA  A7            2375+         DM      XP14 SHR 8      ; Jump table entry
2BDB  9C            2376+         DB      XP14 AND 0FFH
2BDC  3C            2377          DB      '<'
2BDD                2378          JTE     XP16
2BDD  A7            2379+         DM      XP16 SHR 8      ; Jump table entry
2BDE  AA            2380+         DB      XP16 AND 0FFH
2BDF                2381          JTE     XP17            ; End list 3
2BDF  A7            2382+         DM      XP17 SHR 8      ; Jump table entry
2BE0  B0            2383+         DB      XP17 AND 0FFH
                    2384 ;
2BE1  11D44E        2385 GETLN    LD      DE,BUFFER       ; Output A and input into
```

```
2BE4                    2386 L2BE4   OUTC                    ; BUFFER
2BE4  DF                2387+        RST     18H            ; Output Char. in A
2BE5  C5                2388 L2BE5   PUSH    BC
2BE6  D5                2389         PUSH    DE
2BE7  E5                2390         PUSH    HL
2BE8  0EAA              2391         LD      C,0AAH
2BEA  CD892D            2392         CALL    L2D89
2BED  21624E            2393 L2BED   LD      HL,L4E62
2BF0  7E                2394         LD      A,(HL)
2BF1  A7                2395         AND     A
2BF2  2838              2396         JR      Z,L2C2C
2BF4  35                2397         DEC     (HL)
2BF5  FE05              2398         CP      5
2BF7  200C              2399         JR      NZ,L2C05
2BF9  2A644E            2400         LD      HL,(L4E64)
2BFC  110A00            2401         LD      DE,10
2BFF  19                2402         ADD     HL,DE
2C00  CBBC              2403         RES     7,H
2C02  22604E            2404         LD      (L4E60),HL
2C05  FF                2405 L2C05   RST     38H
2C06                    2406         DO      90+1           ; Get 2F0FH+(A*2)
2C06  5B                2407+        DB      90+1           ; Subroutine 90+1
2C07  0F2F              2408         DW      L2F11-2        ; to DE
2C09  2A604E            2409         LD      HL,(L4E60)
2C0C  0600              2410         LD      B,0
2C0E  A7                2411 L2C0E   AND     A
2C0F  ED52              2412         SBC     HL,DE
2C11  FA172C            2413         JP      M,L2C17
2C14  04                2414         INC     B
2C15  18F7              2415         JR      L2C0E
2C17  19                2416 L2C17   ADD     HL,DE
2C18  22604E            2417         LD      (L4E60),HL
2C1B  21634E            2418         LD      HL,L4E63
2C1E  78                2419         LD      A,B
2C1F  A7                2420         AND     A
2C20  2005              2421         JR      NZ,L2C27
2C22  7E                2422         LD      A,(HL)
2C23  A7                2423         AND     A
2C24  28C7              2424         JR      Z,L2BED
2C26  AF                2425         XOR     A
2C27  C630              2426 L2C27   ADD     A,'0'
2C29  77                2427         LD      (HL),A
2C2A  1803              2428         JR      L2C2F
2C2C  CD9D2D            2429 L2C2C   CALL    TAPEIN
2C2F  E1                2430 L2C2F   POP     HL
2C30  D1                2431         POP     DE
2C31  C1                2432         POP     BC
2C32  12                2433         LD      (DE),A
2C33  FE1F              2434         CP      1FH
2C35  202F              2435         JR      NZ,L2C66       ; Jp if not ERASE
2C37  7B                2436         LD      A,E
2C38  FED4              2437         CP      BUFFER AND 0FFH
2C3A  28A9              2438         JR      Z,L2BE5        ; Jp if at beginning
2C3C  1B                2439         DEC     DE
2C3D  1A                2440         LD      A,(DE)
2C3E  FE68              2441         CP      68H
2C40  3007              2442         JR      NC,L2C49
```

```
2C42  CD852E      2443          CALL    L2E85
2C45  3E1F        2444          LD      A,1FH
2C47  189B        2445          JR      L2BE4
2C49  D5          2446 L2C49    PUSH    DE
2C4A  CDEE2E      2447          CALL    L2EEE
2C4D  7E          2448 L2C4D    LD      A,(HL)
2C4E  E5          2449          PUSH    HL
2C4F  E67F        2450          AND     7FH
2C51  CD852E      2451          CALL    L2E85
2C54  3E1F        2452          LD      A,1FH
2C56  CDCF2C      2453          CALL    L2CCF
2C59  E1          2454          POP     HL
2C5A  7E          2455          LD      A,(HL)
2C5B  23          2456          INC     HL
2C5C  07          2457          RLCA
2C5D  30EE        2458          JR      NC,L2C4D
2C5F  3E1F        2459          LD      A,1FH
2C61              2460          OUTC
2C61  DF          2461+         RST     18H             ; Output Char. in A
2C62  D1          2462          POP     DE
2C63  C3E52B      2463 L2C63    JP      L2BE5
2C66  FE0D        2464 L2C66    CP      CR
2C68  CA752C      2465          JP      Z,L2C75
2C6B  7B          2466          LD      A,E
2C6C  FE3C        2467          CP      (BUFFER+104) AND 0FFH
2C6E  28F3        2468          JR      Z,L2C63
2C70  1A          2469          LD      A,(DE)
2C71  13          2470          INC     DE
2C72  C3E42B      2471          JP      L2BE4
2C75  13          2472 L2C75    INC     DE
2C76  13          2473          INC     DE
2C77  3EFF        2474          LD      A,0FFH
2C79  12          2475          LD      (DE),A
2C7A  1B          2476          DEC     DE
2C7B  3E0D        2477 CRLF     LD      A,CR
                  2478 ;
                  2479 ;        OUTC    (RST    18H)
                  2480 ;
2C7D  E5          2481 L2C7D    PUSH    HL
2C7E  D5          2482          PUSH    DE
2C7F  C5          2483          PUSH    BC
2C80  F5          2484          PUSH    AF
2C81  57          2485          LD      D,A             ; Save the character
2C82  3AC24E      2486          LD      A,(L4EC2)
2C85  FE06        2487          CP      6
2C87  282F        2488          JR      Z,L2CB8         ; Jp if *PRINT
2C89  E602        2489          AND     2
2C8B  2830        2490          JR      Z,L2CBD         ; Jp if not :PRINT
2C8D  4A          2491 L2C8D    LD      C,D
2C8E  CB01        2492          RLC     C
2C90  DB12        2493 L2C90    IN      A,(PORT12)
2C92  E602        2494          AND     2
2C94  28FA        2495          JR      Z,L2C90         ; Wait for clock high
2C96  060A        2496          LD      B,0AH           ; Do 10 bits
2C98  3EC0        2497 L2C98    LD      A,0C0H
2C9A  3D          2498 L2C9A    DEC     A
2C9B  20FD        2499          JR      NZ,L2C9A        ; Give clock some time
```

```
2C9D  05        2500          DEC     B               ; Count output bits
2C9E  281D      2501          JR      Z,L2CBD
2CA0  DB12      2502          IN      A,(PORT12)
2CA2  5F        2503          LD      E,A
2CA3  DB12      2504 L2CA3    IN      A,(PORT12)
2CA5  AB        2505          XOR     E
2CA6  E602      2506          AND     2
2CA8  28F9      2507          JR      Z,L2CA3
2CAA  7B        2508          LD      A,E
2CAB  A9        2509          XOR     C
2CAC  E602      2510          AND     2
2CAE  2802      2511          JR      Z,L2CB2
2CB0  DB12      2512          IN      A,(PORT12)
2CB2  CBC9      2513 L2CB2    SET     1,C
2CB4  CB09      2514          RRC     C
2CB6  18E0      2515          JR      L2C98
                2516 ;
2CB8  7A        2517 L2CB8    LD      A,D             ; *PRINT process
2CB9  FE68      2518          CP      68H
2CBB  38D0      2519          JR      C,L2C8D         ; Jp if not word
2CBD  7A        2520 L2CBD    LD      A,D
2CBE  CDCF2C    2521          CALL    L2CCF
2CC1  F1        2522          POP     AF
2CC2  C1        2523          POP     BC
2CC3  D1        2524          POP     DE
2CC4  E1        2525          POP     HL
2CC5  C9        2526          RET
                2527 ;
2CC6  6F        2528 L2CC6    LD      L,A
2CC7  3AC24E    2529          LD      A,(L4EC2)
2CCA  FE06      2530          CP      6
2CCC  7D        2531          LD      A,L
2CCD  28AE      2532          JR      Z,L2C7D
2CCF  FE0D      2533 L2CCF    CP      CR
2CD1  282E      2534          JR      Z,L2D01
2CD3  FE1F      2535          CP      1FH
2CD5  280F      2536          JR      Z,L2CE6
2CD7  3804      2537          JR      C,L2CDD
2CD9  FE78      2538          CP      78H
2CDB  3802      2539          JR      C,L2CDF
2CDD  3E3F      2540 L2CDD    LD      A,3FH
2CDF  FE68      2541 L2CDF    CP      68H
2CE1  304F      2542          JR      NC,L2D32
2CE3  CD852E    2543          CALL    L2E85
2CE6  CD472D    2544 L2CE6    CALL    L2D47
2CE9  CD8B23    2545          CALL    L238B
2CEC  FE1F      2546          CP      1FH
2CEE  201F      2547          JR      NZ,L2D0F
2CF0  7D        2548          LD      A,L
2CF1  A7        2549          AND     A
2CF2  2805      2550          JR      Z,L2CF9
2CF4  D606      2551          SUB     6
2CF6  6F        2552          LD      L,A
2CF7  1831      2553          JR      L2D2A
2CF9  2E96      2554 L2CF9    LD      L,96H
2CFB  7C        2555          LD      A,H
2CFC  D608      2556          SUB     8
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```
2CFE  67          2557         LD      H,A
2CFF  1829        2558         JR      L2D2A
2D01  3A544E      2559 L2D01   LD      A,(L4E54)
2D04  A7          2560         AND     A
2D05  2026        2561         JR      NZ,L2D2D
2D07  CD472D      2562         CALL    L2D47
2D0A  CD4B2D      2563         CALL    L2D4B
2D0D  181E        2564         JR      L2D2D
2D0F  54          2565 L2D0F   LD      D,H
2D10  5D          2566         LD      E,L
2D11  F680        2567         OR      80H
2D13  0E18        2568         LD      C,18H
2D15  DD21664E    2569         LD      IX,L4E66
2D19  FF          2570         RST     38H
2D1A              2571         DO      50              ; Display Character
2D1A  32          2572+        DB      50              ; Subroutine 50
2D1B  7D          2573         LD      A,L             ; Skip a space
2D1C  C606        2574         ADD     A,6
2D1E  6F          2575         LD      L,A
2D1F  FE9C        2576         CP      9CH
2D21  2007        2577         JR      NZ,L2D2A
2D23  CD4B2D      2578         CALL    L2D4B
2D26  3E01        2579         LD      A,1
2D28  1804        2580         JR      L2D2E
2D2A  CDA523      2581 L2D2A   CALL    L23A5
2D2D  AF          2582 L2D2D   XOR     A
2D2E  32544E      2583 L2D2E   LD      (L4E54),A
2D31  C9          2584         RET
2D32  CDEE2E      2585 L2D32   CALL    L2EEE
2D35  7E          2586 L2D35   LD      A,(HL)
2D36  E67F        2587         AND     7FH
2D38  E5          2588         PUSH    HL
2D39  CDC62C      2589         CALL    L2CC6
2D3C  E1          2590         POP     HL
2D3D  7E          2591         LD      A,(HL)
2D3E  23          2592         INC     HL
2D3F  07          2593         RLCA
2D40  30F3        2594         JR      NC,L2D35
2D42  3E20        2595         LD      A,' '
2D44  C3C62C      2596         JP      L2CC6
2D47  0E00        2597 L2D47   LD      C,0
2D49  183E        2598         JR      L2D89
2D4B  CD8B23      2599 L2D4B   CALL    L238B
2D4E  2E00        2600         LD      L,0
2D50  7C          2601         LD      A,H
2D51  FE50        2602         CP      50H
2D53  202D        2603         JR      NZ,L2D82
2D55  CDA523      2604         CALL    L23A5
2D58  21C04D      2605         LD      HL,L4DC0
2D5B  7E          2606 L2D5B   LD      A,(HL)
2D5C  E655        2607         AND     55H
2D5E  77          2608         LD      (HL),A
2D5F  23          2609         INC     HL
2D60  7D          2610         LD      A,L
2D61  FE20        2611         CP      ' '
2D63  20F6        2612         JR      NZ,L2D5B
2D65  0604        2613         LD      B,4
```

```
2D67  C5          2614 L2D67   PUSH    BC
2D68  210040      2615         LD      HL,L4000
2D6B  115040      2616         LD      DE,L4050
2D6E  010E98      2617         LD      BC,980EH
2D71  1A          2618 L2D71   LD      A,(DE)
2D72  AE          2619         XOR     (HL)
2D73  E6AA        2620         AND     0AAH          ; Save screen bits
2D75  AE          2621         XOR     (HL)          ; Make them good
2D76  77          2622         LD      (HL),A        ; Move them up
2D77  23          2623         INC     HL
2D78  13          2624         INC     DE
2D79  10F6        2625         DJNZ    L2D71
2D7B  0D          2626         DEC     C
2D7C  20F3        2627         JR      NZ,L2D71
2D7E  C1          2628         POP     BC
2D7F  10E6        2629         DJNZ    L2D67
2D81  C9          2630         RET
2D82  C608        2631 L2D82   ADD     A,8
2D84  67          2632         LD      H,A
2D85  CDA523      2633         CALL    L23A5
2D88  C9          2634         RET
                  2635 ;
2D89  F5          2636 L2D89   PUSH    AF            ; Get CY/CX to HL
2D8A  CD8B23      2637         CALL    L238B
2D8D  EB          2638         EX      DE,HL
2D8E  AF          2639         XOR     A
2D8F  FF          2640         RST     38H
2D90              2641         DO      58
2D90  3A          2642+        DB      58            ; Subroutine 58
2D91  D30C        2643         OUT     (PORT0C),A
2D93  EB          2644         EX      DE,HL
2D94  79          2645         LD      A,C
2D95  010608      2646         LD      BC,806H
2D98  CD8922      2647         CALL    L2289
2D9B  F1          2648         POP     AF
2D9C  C9          2649         RET
                  2650 ;
2D9D  3AC24E      2651 TAPEIN  LD      A,(L4EC2)     ; I/O flag
2DA0  3D          2652         DEC     A
2DA1  2019        2653         JR      NZ,L2DBC      ; Not 1 = KBD input
2DA3  CD5B2E      2654         CALL    L2E5B         ; 1 = TAP input, chk for abort
2DA6  C29024      2655         JP      NZ,L2490      ; Abort, start over
2DA9  2A204E      2656         LD      HL,(L4E20)    ; Get tape input buffer pointer
2DAC  7C          2657         LD      A,H           ; Get extract pointer
2DAD  BD          2658         CP      L
2DAE  28ED        2659         JR      Z,TAPEIN      ; No data yet
2DB0  6F          2660         LD      L,A
2DB1  264E        2661         LD      H,L4E22 SHR 8
2DB3  4E          2662         LD      C,(HL)        ; Get tape data
2DB4  CD2C21      2663         CALL    L212C
2DB7  32214E      2664         LD      (L4E21),A     ; Update extract pointer
2DBA  79          2665         LD      A,C           ; Get byte
2DBB  C9          2666         RET
                  2667 ;
2DBC  CD5B2E      2668 L2DBC   CALL    L2E5B         ; Get keyboard data
2DBF  20FB        2669         JR      NZ,L2DBC      ; Wait till no key change
2DC1  21554E      2670         LD      HL,L4E55
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```
2DC4  3606      2671          LD      (HL),6          ; Set key release timer
2DC6  7E        2672 L2DC6    LD      A,(HL)
2DC7  A7        2673          AND     A
2DC8  20FC      2674          JR      NZ,L2DC6        ; Wait for timer to expire
2DCA  3AA24E    2675          LD      A,(BKC)         ; Get BC
2DCD  F5        2676          PUSH    AF
2DCE  21672F    2677          LD      HL,L2F67
2DD1  E5        2678 L2DD1    PUSH    HL
2DD2  21BA2F    2679          LD      HL,L2FBA
2DD5  11EBFF    2680          LD      DE,-21          ; 20 keys+color
2DD8  011404    2681          LD      BC,414H
2DDB  ED78      2682 L2DDB    IN      A,(C)           ; Get shift key
2DDD  E620      2683          AND     20H
2DDF  2007      2684          JR      NZ,L2DE8        ; Got one
2DE1  19        2685          ADD     HL,DE           ; Back up to previous table
2DE2  0C        2686          INC     C               ; Next port
2DE3  10F6      2687          DJNZ    L2DDB           ; Do all 4 ports
2DE5  E1        2688          POP     HL              ; Get current no-shift address
2DE6  180F      2689          JR      L2DF7
                2690 ;
2DE8  D1        2691 L2DE8    POP     DE              ; Clear stack
2DE9  3AA24E    2692          LD      A,(BKC)         ; Get BC
2DEC  BE        2693          CP      (HL)
2DED  2807      2694          JR      Z,L2DF6         ; Jp if same as desired
2DEF  7E        2695          LD      A,(HL)          ; Get desired BC
2DF0  32A24E    2696          LD      (BKC),A         ; Save it
2DF3  CD2A2E    2697          CALL    L2E2A
2DF6  23        2698 L2DF6    INC     HL              ; Point to keys
2DF7  CD5B2E    2699 L2DF7    CALL    L2E5B           ; Get input
2DFA  28D5      2700          JR      Z,L2DD1         ; Not there, allow different
                2701                                  ;  shift key
2DFC  3D        2702          DEC     A               ; Back to keys 0-23
2DFD  4F        2703          LD      C,A
2DFE  0600      2704          LD      B,0
2E00  09        2705          ADD     HL,BC           ; Point to conversion
2E01  F1        2706          POP     AF              ; Get original BC
2E02  32A24E    2707          LD      (BKC),A         ; Reset it
2E05  7E        2708          LD      A,(HL)          ; Get key conversion
2E06  A7        2709          AND     A
2E07  284C      2710          JR      Z,L2E55         ; Restart if no code
2E09  FE01      2711          CP      1
2E0B  CA9D2D    2712          JP      Z,TAPEIN        ; Meaningless key
2E0E  F5        2713          PUSH    AF              ; Save key code
2E0F  FE67      2714          CP      67H
2E11  300A      2715          JR      NC,L2E1D        ; Jp if word
2E13  FF        2716          RST     38H
2E14            2717          DO      92+1            ; HL+A to HL
2E14  5D        2718+         DB      92+1            ; Subroutine 92+1
2E15  032F      2719          DW      L2F03
2E17  3C        2720          INC     A
2E18  2003      2721          JR      NZ,L2E1D
2E1A  CD2A2E    2722          CALL    L2E2A
2E1D  F1        2723 L2E1D    POP     AF              ; Regain converted key
2E1E  FE67      2724          CP      67H             ; Was it GO+10 ?
2E20  C0        2725          RET     NZ
2E21  210500    2726          LD      HL,5            ; Yes
2E24  22624E    2727          LD      (L4E62),HL
```

```
2E27  3E0D        2728          LD      A,CR            ; Return a CR
2E29  C9          2729          RET
                  2730 ;
2E2A  3A574E      2731 L2E2A    LD      A,(L4E57)       ; Wait for current note to
2E2D  A7          2732          AND     A               ;  finish
2E2E  20FA        2733          JR      NZ,L2E2A
2E30  3EFD        2734          LD      A,0FDH
2E32  32594E      2735          LD      (L4E59),A
2E35  3AA64E      2736          LD      A,(NT)          ; Get note time
2E38  A7          2737          AND     A
2E39  C8          2738          RET     Z
2E3A  3E01        2739          LD      A,1             ; 1 beat delay
2E3C  32574E      2740          LD      (L4E57),A
2E3F  C9          2741          RET
                  2742 ;
                  2743 ;        Check for PAUSE or ABORT
                  2744 ;
2E40  C5          2745 L2E40    PUSH    BC
2E41  D5          2746          PUSH    DE
2E42  CD5B2E      2747          CALL    L2E5B           ; Get calculator input
2E45  D602        2748          SUB     2               ; Was it PAUSE?
2E47  2805        2749          JR      Z,L2E4E         ; Yes
2E49  3D          2750          DEC     A
2E4A  2809        2751          JR      Z,L2E55         ; Jp if HALT
2E4C  180A        2752          JR      L2E58           ; Else leave
                  2753 ;
2E4E  CD5B2E      2754 L2E4E    CALL    L2E5B           ; PAUSE: wait for another key
2E51  28FB        2755          JR      Z,L2E4E
2E53  FE03        2756          CP      3               ; Was it another HALT
2E55  CA9324      2757 L2E55    JP      Z,ST1           ; Yes, restart
2E58  D1          2758 L2E58    POP     DE
2E59  C1          2759          POP     BC
2E5A  C9          2760          RET
                  2761 ;
                  2762 ;        KEYPAD INPUT (all but shift)
                  2763 ;
2E5B  011404      2764 L2E5B    LD      BC,414H
2E5E  116D4E      2765          LD      DE,L4E6D
2E61  AF          2766          XOR     A
2E62  FF          2767          RST     38H
2E63              2768          DO      118             ; Random number
2E63  76          2769+         DB      118             ; Subroutine 118
2E64  ED78        2770 L2E64    IN      A,(C)           ; Raw key number
2E66  E61F        2771          AND     1FH
2E68  2006        2772          JR      NZ,L2E70        ; Got one
2E6A  0C          2773          INC     C               ; Next port
2E6B  10F7        2774          DJNZ    L2E64           ; Do all input ports
2E6D  AF          2775          XOR     A
2E6E  12          2776          LD      (DE),A          ; Set last key = 0
2E6F  C9          2777          RET                     ; and leave
                  2778 ;
2E70  05          2779 L2E70    DEC     B
2E71  0E00        2780          LD      C,0
2E73  0F          2781 L2E73    RRCA
2E74  3803        2782          JR      C,L2E79
2E76  0C          2783          INC     C
2E77  18FA        2784          JR      L2E73
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2E79  79          2785 L2E79   LD      A,C
2E7A  07          2786         RLCA
2E7B  07          2787         RLCA
2E7C  B0          2788         OR      B
2E7D  3C          2789         INC     A              ; Keys 1-24
2E7E  47          2790         LD      B,A
2E7F  1A          2791         LD      A,(DE)
2E80  A8          2792         XOR     B
2E81  C8          2793         RET     Z              ; Leave if same as last time
2E82  78          2794         LD      A,B            ; Save new value
2E83  12          2795         LD      (DE),A
2E84  C9          2796         RET                    ;  and leave
                  2797 ;
                  2798 ;       NOTE OUTPUT
                  2799 ;
2E85  E5          2800 L2E85   PUSH    HL
2E86  D5          2801         PUSH    DE
2E87  F5          2802         PUSH    AF
2E88  67          2803         LD      H,A
2E89  3A574E      2804 L2E89   LD      A,(L4E57)
2E8C  A7          2805         AND     A
2E8D  20FA        2806         JR      NZ,L2E89
2E8F  7C          2807         LD      A,H
2E90  FE63        2808         CP      63H
2E92  282E        2809         JR      Z,L2EC2        ; Jp if divide
2E94  FE62        2810         CP      62H
2E96  2831        2811         JR      Z,L2EC9        ; Jp if multiply
2E98  FE2B        2812         CP      '+'
2E9A  2831        2813         JR      Z,L2ECD        ; Jp if plus
2E9C  FE2D        2814         CP      '-'
2E9E  2830        2815         JR      Z,L2ED0        ; Jp if minus
2EA0  FE30        2816         CP      '0'
2EA2  2830        2817         JR      Z,L2ED4        ; Jp if 0
2EA4  21032F      2818         LD      HL,L2F03
2EA7  FF          2819 L2EA7   RST     38H
2EA8              2820         DO      92             ; HL+A to HL
2EA8  5C          2821+        DB      92             ; Subroutine 92
2EA9  3C          2822         INC     A
2EAA  280E        2823         JR      Z,L2EBA        ; -1 is no sound
2EAC  3C          2824         INC     A
2EAD  2831        2825         JR      Z,L2EE0        ; -2 is number key
2EAF  3D          2826         DEC     A
2EB0  3D          2827         DEC     A
2EB1  32594E      2828         LD      (L4E59),A      ; Save next note
2EB4  3AA64E      2829         LD      A,(NT)
2EB7  32574E      2830         LD      (L4E57),A
2EBA  AF          2831 L2EBA   XOR     A              ; Set for normal notes
2EBB  325A4E      2832 L2EBB   LD      (L4E5A),A
2EBE  F1          2833 L2EBE   POP     AF
2EBF  D1          2834         POP     DE
2EC0  E1          2835         POP     HL
2EC1  C9          2836         RET
2EC2  3E8F        2837 L2EC2   LD      A,8FH
2EC4  32584E      2838 L2EC4   LD      (L4E58),A      ; Save master sound divider
2EC7  18F5        2839         JR      L2EBE
2EC9  3E23        2840 L2EC9   LD      A,23H
2ECB  18F7        2841         JR      L2EC4
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2ECD  3E01        2842 L2ECD   LD      A,1             ; Set for sharps
2ECF  11          2843         DB      11H             ; Skips 2 bytes
2ED0  3E02        2844 L2ED0   LD      A,2             ; Set for flats
2ED2  18E7        2845         JR      L2EBB
2ED4  21564E      2846 L2ED4   LD      HL,L4E56
2ED7  3AA64E      2847         LD      A,(NT)
2EDA  F3          2848         DI
2EDB  86          2849         ADD     A,(HL)          ; Increment note time by one NT
2EDC  77          2850         LD      (HL),A
2EDD  FB          2851         EI
2EDE  18DE        2852         JR      L2EBE
2EE0  3A5A4E      2853 L2EE0   LD      A,(L4E5A)
2EE3  FF          2854         RST     38H
2EE4              2855         DO      90+1
2EE4  5B          2856+        DB      90+1            ; Subroutine 90+1
2EE5  FC2E        2857         DW      L2EFC
2EE7  EB          2858         EX      DE,HL
2EE8  F1          2859         POP     AF
2EE9  F5          2860         PUSH    AF
2EEA  D631        2861         SUB     '1'             ; Set for proper increment
2EEC  18B9        2862         JR      L2EA7
2EEE  216420      2863 L2EEE   LD      HL,L2064
2EF1  D668        2864         SUB     68H
2EF3  C8          2865 L2EF3   RET     Z
2EF4  CB7E        2866 L2EF4   BIT     7,(HL)
2EF6  23          2867         INC     HL
2EF7  28FB        2868         JR      Z,L2EF4
2EF9  3D          2869         DEC     A
2EFA  18F7        2870         JR      L2EF3
                  2871 ;
2EFC  092F        2872 L2EFC   DW      L2F09           ; Normal note table
2EFE  1B2F        2873         DW      L2F1B           ; Sharp note table
2F00  022F        2874         DW      L2F02           ; Flat note table
                  2875 ;
                  2876 ;       FLAT 1-8 TABLE
                  2877 ;
2F02  64          2878 L2F02   DB      64H
2F03  59          2879 L2F03   DB      59H             ; 0 ASCII VALUE NOTE TABLE
2F04  4F          2880         DB      4FH             ; 1
2F05  4A          2881         DB      4AH             ; 2
2F06  42          2882         DB      42H             ; 3
2F07  3B          2883         DB      3BH             ; 4
2F08  34          2884         DB      34H             ; 5
                  2885 ;
                  2886 ;       NORMAL 1-8 TABLE
                  2887 ;
2F09  5E          2888 L2F09   DB      5EH             ; 6
2F0A  54          2889         DB      54H             ; 7
2F0B  4A          2890         DB      4AH             ; 8
2F0C  46          2891         DB      46H             ; 9
2F0D  3E          2892         DB      3EH             ; 10    0AH
2F0E  37          2893         DB      37H             ; 11    0BH
2F0F  31          2894         DB      31H             ; 12    0CH
2F10  FF          2895         DB      0FFH            ; 13    0DH     Carriage return
                  2896 ;
2F11  0100        2897 L2F11   DW      1               ; 14,15 0EH,0FH
2F13  0A00        2898         DW      10              ; 16,17 10H,11H
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2F15  6400        2899          DW      100             ; 18,19 12H,13H
2F17  E803        2900          DW      1000            ; 20,21 14H,15H
2F19  1027        2901          DW      10000           ; 22,23 16H,17H
                  2902 ;
                  2903 ;        SHARP 1-8 TABLE
                  2904 ;
2F1B  59          2905 L2F1B    DB      59H             ; 24    18H
2F1C  4F          2906          DB      4FH             ; 25    19H
2F1D  46          2907          DB      46H             ; 26    1AH
2F1E  42          2908          DB      42H             ; 27    1BH
2F1F  3B          2909          DB      3BH             ; 28    1CH
2F20  34          2910          DB      34H             ; 29    1DH
2F21  2E          2911          DB      2EH             ; 30    1EH
2F22  FF          2912          DB      0FFH            ; 31    1FH
                  2913 ;
2F23  00          2914          DB      0               ; 32    20H     SPACE
2F24  E1          2915          DB      0E1H            ; 33    21H     !
2F25  D4          2916          DB      0D4H            ; 34    22H     "
2F26  C8          2917          DB      0C8H            ; 35    23H     #
2F27  BD          2918          DB      0BDH            ; 36    24H     $
2F28  B2          2919          DB      0B2H            ; 37    25H     %
2F29  A8          2920          DB      0A8H            ; 38    26H     &
2F2A  9F          2921          DB      9FH             ; 39    27H     '
2F2B  96          2922          DB      96H             ; 40    28H     (
2F2C  8D          2923          DB      8DH             ; 41    29H     )
2F2D  85          2924          DB      85H             ; 42    2AH     *
2F2E  FF          2925          DB      0FFH            ; 43    2BH     +
2F2F  77          2926          DB      77H             ; 44    2CH     ,
2F30  FF          2927          DB      0FFH            ; 45    2DH     -
2F31  6A          2928          DB      6AH             ; 46    2EH     .
2F32  64          2929          DB      64H             ; 47    2FH     /
2F33  FF          2930          DB      0FFH            ; 48    30H     0
2F34  FE          2931          DB      0FEH            ; 49    31H     1
2F35  FE          2932          DB      0FEH            ; 50    32H     2
2F36  FE          2933          DB      0FEH            ; 51    33H     3
2F37  FE          2934          DB      0FEH            ; 52    34H     4
2F38  FE          2935          DB      0FEH            ; 53    35H     5
2F39  FE          2936          DB      0FEH            ; 54    36H     6
2F3A  FE          2937          DB      0FEH            ; 55    37H     7
2F3B  2E          2938          DB      46              ; 56    38H     8
2F3C  2C          2939          DB      44              ; 57    39H     9
2F3D  29          2940          DB      41              ; 58    3AH     :
2F3E  27          2941          DB      39              ; 59    3BH     ;
2F3F  25          2942          DB      37              ; 60    3CH     <
2F40  22          2943          DB      34              ; 61    3DH     =
2F41  20          2944          DB      32              ; 62    3EH     >
2F42  1F          2945          DB      31              ; 63    3FH     ?
2F43  1D          2946          DB      29              ; 64    40H     @
2F44  1B          2947          DB      27              ; 65    41H     A
2F45  1A          2948          DB      26              ; 66    42H     B
2F46  18          2949          DB      24              ; 67    43H     C
2F47  17          2950          DB      23              ; 68    44H     D
2F48  15          2951          DB      21              ; 69    45H     E
2F49  14          2952          DB      20              ; 70    46H     F
2F4A  13          2953          DB      19              ; 71    47H     G
2F4B  12          2954          DB      18              ; 72    48H     H
2F4C  11          2955          DB      17              ; 73    49H     I
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2F4D  10          2956          DB      16              ; 74    4AH     J
2F4E  0F          2957          DB      15              ; 75    4BH     K
2F4F  0E          2958          DB      14              ; 76    4CH     L
2F50  0D          2959          DB      13              ; 77    4DH     M
2F51  0B          2960          DB      11              ; 78    4EH     N
2F52  0A          2961          DB      10              ; 79    4FH     O
2F53  09          2962          DB      9               ; 80    50H     P
2F54  08          2963          DB      8               ; 81    51H     Q
2F55  07          2964          DB      7               ; 82    52H     R
2F56  06          2965          DB      6               ; 83    53H     S
2F57  05          2966          DB      5               ; 84    54H     T
2F58  04          2967          DB      4               ; 85    55H     U
2F59  03          2968          DB      3               ; 86    56H     V
2F5A  02          2969          DB      2               ; 87    57H     W
2F5B  01          2970          DB      1               ; 88    58H     X
2F5C  64          2971          DB      64H             ; 89    59H     Y
2F5D  5E          2972          DB      5EH             ; 90    5AH     Z
2F5E  59          2973          DB      59H             ; 91    5BH     [
2F5F  54          2974          DB      54H             ; 92    5CH     \
2F60  4F          2975          DB      4FH             ; 93    5DH     ]
2F61  4A          2976          DB      4AH             ; 94    5EH     ↑
2F62  46          2977          DB      46H             ; 95    5FH     LEFT ARROW
2F63  42          2978          DB      42H             ; 96    60H     DOWN ARROW
2F64  3E          2979          DB      3EH             ; 97    61H     RIGHT ARROW
2F65  FF          2980          DB      0FFH            ; 98    62H     MULTIPLY SIGN
2F66  FF          2981          DB      0FFH            ; 99    63H     DIVIDE SIGN
                  2982 ;
                  2983 ;        CHARACTER TABLE, NO SHIFT KEYS
                  2984 ;
2F67  0D          2985 L2F67    DB      CR              ; GO
2F68  01          2986          DB      1               ; PAUSE
2F69  00          2987          DB      0               ; HALT
2F6A  63          2988          DB      63H             ; DIVIDE
2F6B  37          2989          DB      '7'             ; 7
2F6C  38          2990          DB      '8'             ; 8
2F6D  39          2991          DB      '9'             ; 9
2F6E  62          2992          DB      62H             ; x     (Multiply)
2F6F  34          2993          DB      '4'             ; 4
2F70  35          2994          DB      '5'             ; 5
2F71  36          2995          DB      '6'             ; 6
2F72  2D          2996          DB      '-'             ; -
2F73  31          2997          DB      '1'             ; 1
2F74  32          2998          DB      '2'             ; 2
2F75  33          2999          DB      '3'             ; 3
2F76  2B          3000          DB      '+'             ; +
2F77  20          3001          DB      ' '             ; SPACE
2F78  30          3002          DB      '0'             ; 0
2F79  1F          3003          DB      1FH             ; ERASE
2F7A  3D          3004          DB      '='             ; =
                  3005 ;
                  3006 ;        PORT 17 SHIFT KEY (GREEN BACKGROUND)
                  3007 ;
2F7B  A7          3008          DB      0A7H            ; Background color
2F7C  0D          3009          DB      CR              ; GO
2F7D  01          3010          DB      1               ;
2F7E  00          3011          DB      0               ;
2F7F  01          3012          DB      1               ;
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2F80  41          3013          DB      'A'             ; A
2F81  44          3014          DB      'D'             ; D
2F82  47          3015          DB      'G'             ; G
2F83  4A          3016          DB      'J'             ; J
2F84  4D          3017          DB      'M'             ; M
2F85  50          3018          DB      'P'             ; P
2F86  53          3019          DB      'S'             ; S
2F87  56          3020          DB      'V'             ; V
2F88  59          3021          DB      'Y'             ; Y
2F89  5F          3022          DB      5FH             ; LEFT ARROW
2F8A  5E          3023          DB      '↑'             ; UP ARROW
2F8B  26          3024          DB      '&'             ; &
2F8C  24          3025          DB      '$'             ; $
2F8D  3C          3026          DB      '<'             ; <
2F8E  28          3027          DB      '('             ; (
2F8F  23          3028          DB      '#'             ; #
                  3029 ;
                  3030 ;        PORT 16 SHIFT KEY (RED BACKGROUND)
                  3031 ;
2F90  5F          3032          DB      05FH            ; Red background
2F91  0D          3033          DB      CR              ; GO
2F92  2F          3034          DB      '/'             ; /
2F93  00          3035          DB      0               ;
2F94  5B          3036          DB      '['             ; [
2F95  42          3037          DB      'B'             ; B
2F96  45          3038          DB      'E'             ; E
2F97  48          3039          DB      'H'             ; H
2F98  4B          3040          DB      'K'             ; K
2F99  4E          3041          DB      'N'             ; N
2F9A  51          3042          DB      'Q'             ; Q
2F9B  54          3043          DB      'T'             ; T
2F9C  57          3044          DB      'W'             ; W
2F9D  5A          3045          DB      'Z'             ; Z
2F9E  27          3046          DB      ''''            ; '
2F9F  2E          3047          DB      '.'             ; .
2FA0  40          3048          DB      '@'             ; @
2FA1  2C          3049          DB      ','             ; ,
2FA2  22          3050          DB      '"'             ; "
2FA3  3B          3051          DB      ';'             ; ;
2FA4  25          3052          DB      '%'             ; %
                  3053 ;
                  3054 ;        PORT 15 SHIFT KEY (BLUE BACKGROUND)
                  3055 ;
2FA5  0F          3056          DB      0FH             ; Blue background
2FA6  0D          3057          DB      CR              ; GO
2FA7  5C          3058          DB      '\'             ; \
2FA8  00          3059          DB      0               ;
2FA9  5D          3060          DB      ']'             ; ]
2FAA  43          3061          DB      'C'             ; C
2FAB  46          3062          DB      'F'             ; F
2FAC  49          3063          DB      'I'             ; I
2FAD  4C          3064          DB      'L'             ; L
2FAE  4F          3065          DB      'O'             ; O
2FAF  52          3066          DB      'R'             ; R
2FB0  55          3067          DB      'U'             ; U
2FB1  58          3068          DB      'X'             ; X
2FB2  21          3069          DB      '!'             ; !
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2FB3  61          3070          DB      61H             ; RIGHT ARROW
2FB4  60          3071          DB      60H             ; DOWN ARROW
2FB5  2A          3072          DB      '*'             ; *
2FB6  3F          3073          DB      '?'             ; ?
2FB7  3E          3074          DB      '>'             ; >
2FB8  29          3075          DB      ')'             ; )
2FB9  3A          3076          DB      ':'             ; :
                  3077 ;
                  3078 ;        PORT 14 SHIFT KEY (WORDS)
                  3079 ;
2FBA  77          3080 L2FBA    DB      77H             ; Color
2FBB  67          3081          DB      67H             ; GO+10
2FBC  01          3082          DB      1               ; PAUSE
2FBD  6A          3083          DB      6AH             ; RUN
2FBE  68          3084          DB      68H             ; LIST
2FBF  72          3085          DB      72H             ; FOR
2FC0  77          3086          DB      77H             ; TO
2FC1  75          3087          DB      75H             ; STEP
2FC2  6B          3088          DB      6BH             ; NEXT
2FC3  6F          3089          DB      6FH             ; GOSUB
2FC4  70          3090          DB      70H             ; RETURN
2FC5  76          3091          DB      76H             ; RND
2FC6  6D          3092          DB      6DH             ; IF
2FC7  69          3093          DB      69H             ; CLEAR
2FC8  6C          3094          DB      6CH             ; LINE
2FC9  71          3095          DB      71H             ; BOX
2FCA  6E          3096          DB      6EH             ; GOTO
2FCB  01          3097          DB      1               ;
2FCC  73          3098          DB      73H             ; INPUT
2FCD  01          3099          DB      1
2FCE  74          3100          DB      74H             ; PRINT
                  3101 ;
                  3102 ;        EXTRACT BYTE (DE) FROM SCRATCHPAD
                  3103 ;                  OR
                  3104 ;        EXTRACT BYTE (DE*2) FROM HIDDEN SCREEN AREA
                  3105 ;
2FCF  08          3106 L2FCF    EX      AF,AF'
2FD0  CB7A        3107          BIT     7,D
2FD2  2810        3108          JR      Z,L2FE4         ; Jp if normal scratchpad
2FD4  D5          3109          PUSH    DE
2FD5  EB          3110          EX      DE,HL
2FD6  29          3111          ADD     HL,HL           ; Double the phoney number
2FD7  7E          3112          LD      A,(HL)          ; First get bits 7,5,3,1
2FD8  07          3113          RLCA
2FD9  23          3114          INC     HL
2FDA  AE          3115          XOR     (HL)
2FDB  E6AA        3116          AND     0AAH
2FDD  AE          3117          XOR     (HL)            ; Then bits 6,4,2,0
2FDE  67          3118          LD      H,A
2FDF  08          3119          EX      AF,AF'
2FE0  7C          3120          LD      A,H             ; Byte value to A
2FE1  EB          3121          EX      DE,HL
2FE2  D1          3122          POP     DE              ; Don't mess up his pointer
2FE3  C9          3123          RET
2FE4  08          3124 L2FE4    EX      AF,AF'          ; Extract normal data
2FE5  1A          3125          LD      A,(DE)
2FE6  C9          3126          RET
```

```
                        3127 ;
                        3128 ;       DEPOSIT BYTE AT (HL) INTO SCRATCHPAD
                        3129 ;                        OR
                        3130 ;       DEPOSIT BYTE AT (HL*2) INTO HIDDEN SCREEN AREA
                        3131 ;
2FE7  E5                3132 L2FE7   PUSH    HL
2FE8  F5                3133         PUSH    AF
2FE9  CB7C              3134         BIT     7,H
2FEB  280E              3135         JR      Z,L2FFB         ; Jr if normal deposit
2FED  29                3136         ADD     HL,HL           ; Double his phoney number
2FEE  0F                3137         RRCA                    ; Make bits 7,5,3,1 as
2FEF  AE                3138         XOR     (HL)            ;  6,4,2,0 and get screen
2FF0  E655              3139         AND     55H             ; Save screen bits
2FF2  AE                3140         XOR     (HL)            ;  and restore mine
2FF3  77                3141         LD      (HL),A          ; Then place them away
2FF4  23                3142         INC     HL
2FF5  F1                3143         POP     AF
2FF6  F5                3144         PUSH    AF              ; Now bits 6,4,2,0
2FF7  AE                3145         XOR     (HL)            ; With screen bits
2FF8  E655              3146         AND     55H
2FFA  AE                3147         XOR     (HL)            ; Combined with mine
2FFB  77                3148 L2FFB   LD      (HL),A          ; For the screen area
2FFC  F1                3149         POP     AF
2FFD  E1                3150         POP     HL
2FFE  C9                3151         RET
2FFF  FF                3152         DB      0FFH            ; SPARE CELL
3000  (0000)            3153         END
```

SYMBOL TABLE

ABS	28B0	ASORRY	29AB	AWHAT	2974	BKC	4EA2	BOX	2227
BUFFER	4ED4	CHGSGN	291B	CHKSGN	2918	CK1	2936	CKHLDE	2930
CLEAR	255C	COMP	293A	CR	000D	CRLF	2C7B	CSTRT	2454
CURRNT	4EC3	CX	4EA8	CY	4EAA	DEFLT	2777	DIVIDE	2903
DOLLAR	2194	DV1	290E	DV2	2910	ERROR	2977	EXEC	2512
EXPR2	27C7	EXPR3	27F9	EXPR4	285E	EXXPR	277F	FC	4EA4
FI1	2963	FI2	29CC	FIN	295C	FL2	29CE	FNDLN	29B0
FNDLNP	29B8	FNDNXT	29CD	FNDSKP	29CF	FOR	264A	FR4	2662
FR7	267B	GETLN	2BE1	GETLNA	275C	GOSUB	2614	GOTO	2590
IF	270A	INPUT	2723	IP2	274C	IP4	2745	IP5	274B
JX	28DC	JY	28E8	KN	28C4	KP	23EF	L0206	0206
L0FFF	0FFF	L2003	2003	L201D	201D	L2023	2023	L2029	2029
L2035	2035	L203B	203B	L2040	2040	L2046	2046	L2062	2062
L2064	2064	L20A2	20A2	L20B0	20B0	L20BC	20BC	L20C9	20C9
L20E1	20E1	L20E3	20E3	L20F6	20F6	L210D	210D	L2116	2116
L2128	2128	L2129	2129	L212C	212C	L2133	2133	L2154	2154
L2159	2159	L2165	2165	L216B	216B	L216F	216F	L2172	2172
L2178	2178	L217B	217B	L2181	2181	L2188	2188	L21C8	21C8
L21FB	21FB	L21FF	21FF	L2202	2202	L220D	220D	L2210	2210
L2215	2215	L2218	2218	L221C	221C	L2222	2222	L227D	227D
L2281	2281	L2284	2284	L2289	2289	L2291	2291	L229B	229B
L22A1	22A1	L22AA	22AA	L22AE	22AE	L22B7	22B7	L22BE	22BE
L22D0	22D0	L230E	230E	L2312	2312	L2315	2315	L2330	2330
L233B	233B	L2353	2353	L2368	2368	L236D	236D	L2378	2378
L237D	237D	L2384	2384	L238B	238B	L2397	2397	L23A2	23A2
L23A5	23A5	L23BD	23BD	L23D5	23D5	L23DA	23DA	L23DC	23DC
L23DF	23DF	L23FA	23FA	L2409	2409	L2424	2424	L2427	2427
L242D	242D	L2430	2430	L2431	2431	L245A	245A	L2490	2490
L2496	2496	L24BD	24BD	L2538	2538	L253C	253C	L253E	253E
L254C	254C	L2554	2554	L2562	2562	L25A9	25A9	L25B1	25B1
L25B8	25B8	L25CF	25CF	L25F8	25F8	L2603	2603	L2658	2658
L267C	267C	L2698	2698	L26A6	26A6	L26BE	26BE	L26D8	26D8
L26EE	26EE	L26FF	26FF	L2705	2705	L270B	270B	L272E	272E
L2755	2755	L28CD	28CD	L28EE	28EE	L28F0	28F0	L28F2	28F2
L28F4	28F4	L28F6	28F6	L2946	2946	L2957	2957	L296A	296A
L29FB	29FB	L2A18	2A18	L2A2A	2A2A	L2A31	2A31	L2A32	2A32
L2A3E	2A3E	L2A4B	2A4B	L2A4F	2A4F	L2A54	2A54	L2A7B	2A7B
L2A81	2A81	L2A93	2A93	L2A9B	2A9B	L2AA5	2AA5	L2ABF	2ABF
L2AC1	2AC1	L2AE7	2AE7	L2AEB	2AEB	L2AEC	2AEC	L2AFD	2AFD
L2B10	2B10	L2B11	2B11	L2B1B	2B1B	L2B26	2B26	L2B2D	2B2D
L2B3C	2B3C	L2B3D	2B3D	L2B48	2B48	L2B4E	2B4E	L2B58	2B58
L2BE4	2BE4	L2BE5	2BE5	L2BED	2BED	L2C05	2C05	L2C0E	2C0E
L2C17	2C17	L2C27	2C27	L2C2C	2C2C	L2C2F	2C2F	L2C49	2C49
L2C4D	2C4D	L2C63	2C63	L2C66	2C66	L2C75	2C75	L2C7D	2C7D
L2C8D	2C8D	L2C90	2C90	L2C98	2C98	L2C9A	2C9A	L2CA3	2CA3
L2CB2	2CB2	L2CB8	2CB8	L2CBD	2CBD	L2CC6	2CC6	L2CCF	2CCF
L2CDD	2CDD	L2CDF	2CDF	L2CE6	2CE6	L2CF9	2CF9	L2D01	2D01
L2D0F	2D0F	L2D2A	2D2A	L2D2D	2D2D	L2D2E	2D2E	L2D32	2D32
L2D35	2D35	L2D47	2D47	L2D4B	2D4B	L2D5B	2D5B	L2D67	2D67
L2D71	2D71	L2D82	2D82	L2D89	2D89	L2DBC	2DBC	L2DC6	2DC6
L2DD1	2DD1	L2DDB	2DDB	L2DE8	2DE8	L2DF6	2DF6	L2DF7	2DF7
L2E1D	2E1D	L2E2A	2E2A	L2E40	2E40	L2E4E	2E4E	L2E55	2E55
L2E58	2E58	L2E5B	2E5B	L2E64	2E64	L2E70	2E70	L2E73	2E73
L2E79	2E79	L2E85	2E85	L2E89	2E89	L2EA7	2EA7	L2EBA	2EBA
L2EBB	2EBB	L2EBE	2EBE	L2EC2	2EC2	L2EC4	2EC4	L2EC9	2EC9
L2ECD	2ECD	L2ED0	2ED0	L2ED4	2ED4	L2EE0	2EE0	L2EEE	2EEE
L2EF3	2EF3	L2EF4	2EF4	L2EFC	2EFC	L2F02	2F02	L2F03	2F03

SYMBOL TABLE

L2F09	2F09	L2F11	2F11	L2F1B	2F1B	L2F67	2F67	L2FBA	2FBA
L2FCF	2FCF	L2FE4	2FE4	L2FE7	2FE7	L2FFB	2FFB	L4000	4000
L4050	4050	L4DC0	4DC0	L4E20	4E20	L4E21	4E21	L4E22	4E22
L4E54	4E54	L4E55	4E55	L4E56	4E56	L4E57	4E57	L4E58	4E58
L4E59	4E59	L4E5A	4E5A	L4E5B	4E5B	L4E5C	4E5C	L4E5E	4E5E
L4E60	4E60	L4E62	4E62	L4E63	4E63	L4E64	4E64	L4E66	4E66
L4E6C	4E6C	L4E6D	4E6D	L4EB0	4EB0	L4EB9	4EB9	L4EC2	4EC2
L4FCE	4FCE	L4FFF	4FFF	LF	000A	LINE	22D9	LIST	259B
LOPINC	4ECB	LOPLMT	4ECD	LOPLN	4ECF	LOPPT	4ED1	LOPVAR	4EC9
LPERR	2719	MU	2414	NEXT	269D	NT	4EA6	NX2	2701
PAREN	2889	PORT0C	000C	PORT0D	000D	PORT0E	000E	PORT0F	000F
PORT10	0010	PORT11	0011	PORT12	0012	PORT16	0016	PORT4	0004
PORT5	0005	PORT6	0006	PORT7	0007	PR0	25E5	PR1	25F3
PR2	25DD	PR3	25FB	PR6	2608	PR8	260C	PRINT	25D3
PRTSTG	2AEA	PX	21D8	QHOW	2A7A	QSORRY	29AA	QT3	2B09
QTSTG	2AF8	QWHAT	2973	RETURN	2634	RN	4EAE	RND	2894
RUN	2577	RUNNXL	257A	RUNSML	258A	RUNTSL	2583	SETVAL	2940
ST1	2493	ST2	24A5	ST3	24AE	ST4	24EA	STACK	4FEF
START	249C	STKGOS	4EC5	STKINP	4EC7	STKLMT	4F5C	STVAL	252B
SZ	28B7	TAB1	2B6B	TAB4	2BA2	TAB8	2BCB	TAPEIN	2D9D
TR	28D4	TSTV	29D9	TV	241D	TV1	29FF	TXTBGN	A000
TXTEND	A70C	TXTUNF	4E52	VARNXT	4EC7	XP11	2789	XP12	278F
XP13	2795	XP14	279C	XP15	27A4	XP16	27AA	XP17	27B0
XP18	27B2	XP21	27CF	XP22	27D2	XP23	27D5	XP24	27DC
XP25	27ED	XP26	27F0	XP31	27FC	XP32	2818	XP33	281F
XP34	2828	XP35	2851	XP40	2864	XP41	2877	XP42	2890
XP43	2891	XV	4EAC						

CROSS REFERENCE LISTING

```
ABS     1745  2347 2348
ASORRY  1936  1986
AWHAT   1906  1381
BKC     0036  0234 0987 2675 2692 2696 2707
BOX     0503  0154
BUFFER  0059  1030 1459 2385 2437 2467
CHGSGN  1831  1601 1656 1667 2139
CHKSGN  1827  1612 1614 1642 1644 1748 2201
CK1     1854  1852
CKHLDE  1850  1416 1560
CLEAR   1146  0146
COMP    1857  1078 1382 1854 1985 2097
CR      0067  0140 0141 0142 0143 0327 1237 1506 1894 1965 2168 2177 2464 2477 2533 2728
              2985 3009 3033 3057
CRLF    2477  1015 1232 1239 1275 1907
CSTRT   0956  0119
CURRNT  0050  1023 1172 1292 1310 1335 1420 1449 1470 1493 1496 1909
CX      0039  0786 0806 1160
CY      0040  0779 0800
DEFLT   1505  2308 2309
DIVIDE  1811  1652 1739 2210
DOLLAR  0374  2277 2278
DV1     1819  1814
DV2     1820  1823
ERROR   1907  1937 2095
EXEC    1088  1041 1177
EXPR2   1566  1510 1557
EXPR3   1604  1576 1582 1600
EXPR4   1670  1604 1610 1640
EXXPR   1510  0122 0312
FC      0037  0237
FI1     1892  1889
FI2     1958  1895
FIN     1886  1272 1884
FL2     1962  1955 1966
FNDLN   1939  1054 1182 1209 1290
FNDLNP  1943  1169 1220 1968
FNDNXT  1960  1058
FNDSKP  1964  1442
FOR     1316  0155
FR4     1334  1331
FR7     1346  1354 1357
GETLN   2385  1028 1503
GETLNA  1490  1458
GOSUB   1286  0152
GOTO    1179  0151
IF      1437  0150
INPUT   1453  0156 1477 1495
IP2     1481  1455
IP4     1472  1457
IP5     1478  1476 1507
JX      1779  2327 2328
JY      1788  2331 2332
KN      1761  2319 2320
KP      0849  2335 2336
L0206   0010  0995
L0FFF   0011  0611
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CROSS REFERENCE LISTING

```
L2003   0120  0451 0724
L201D   0133  0989
L2023   0136  1162
L2029   0140  1016
L2035   0141  1906
L203B   0142  2094
L2040   0143  1936
L2046   0145  1098
L2062   0160  0941 0947
L2064   0162  2863
L20A2   0181  2012
L20B0   0198  0160
L20BC   0207  0205
L20C9   0216  0210
L20E1   0233  0215
L20E3   0234  0212 0218 0231
L20F6   0249  0159
L210D   0265  0258
L2116   0271  0259
L2128   0280  0261 0263 0267 0269 0271 0276
L2129   0281  0243
L212C   0285  0274 2663
L2133   0295  0332 0338 0358
L2154   0314  0318
L2159   0317  0323
L2165   0325  0310 1192
L216B   0332  2289 2290
L216F   0338  2281 2282
L2172   0339  0342
L2178   0346  2301 2302
L217B   0351  2285 2286
L2181   0358  2293 2294
L2188   0361  0367
L21C8   0406  0416
L21FB   0462  0378 0387 0402 1864
L21FF   0464  0386 0401 0427 0435 0441
L2202   0466  0396
L220D   0474  0469
L2210   0478  0467
L2215   0483  0478
L2218   0488  0381 0392
L221C   0490  0497
L2222   0495
L227D   0573  0550 0560 0566
L2281   0578  0509 0516 0522 0528
L2284   0580  0547 0557
L2289   0584  0572 2647
L2291   0591  0595
L229B   0596  0592
L22A1   0601  0606
L22AA   0607  0602
L22AE   0609  0594 0607
L22B7   0614  0629
L22BE   0619  0616
L22D0   0635  0517 0523
L230E   0686  0675 0678 0682
L2312   0690  0639 0641 0654 0662
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CROSS REFERENCE LISTING

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L2315   0691  0685
L2330   0710  0706
L233B   0718  0763
L2353   0733  0730
L2368   0749  0757
L236D   0753  0742
L2378   0761  0752
L237D   0766  0674
L2384   0772  0677
L238B   0778  2545 2599 2637
L2397   0785  0783
L23A2   0791  0789
L23A5   0794  2581 2604 2633
L23BD   0808  0694 0699
L23D5   0824  0818
L23DA   0827  0825
L23DC   0829  0823
L23DF   0833  0446 0569 0719
L23FA   0860  2265 2266
L2409   0881  2343 2344
L2424   0915  0865 0895 0906
L2427   0919  2269 2270
L242D   0927  2297 2298
L2430   0928  0919
L2431   0933  0927 0935 1014
L245A   0961  0965
L2490   1014  2655
L2496   1016  1919 1933
L24BD   1035  1033
L2538   1118  1109 1113
L253C   1120  1137 1513 1671
L253E   1123  1127
L254C   1132  1134
L2554   1138  1131
L2562   1148  1155
L25A9   1198  1193 1195
L25B1   1206  1203
L25B8   1210  1221
L25CF   1222  1210 1214
L25F8   1258  1253 1284
L2603   1272  1266
L2658   1326  1323
L267C   1347  1345
L2698   1368  1350
L26A6   1376  1387
L26BE   1388  1383
L26D8   1404  1401
L26EE   1416  1414
L26FF   1426  1403
L2705   1434  2273 2274
L270B   1439  1435
L272E   1458  1488
L2755   1485  1483
L28CD   1766  0799 0805 0811 0814
L28EE   1791  1785
L28F0   1793  1790
L28F2   1795  1783
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CROSS REFERENCE LISTING

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L28F4   1798  1773 1779 1788
L28F6   1799  1762
L2946   1869  1115
L2957   1884  0127
L296A   1899  0124 1903
L29FB   1993  1973
L2A18   2013  2027
L2A2A   2027  2018 2020
L2A31   2033  2026
L2A32   2034  2005 2007
L2A3E   2046  0121
L2A4B   2058  2051
L2A4F   2063  1035 1686
L2A54   2067  2092
L2A7B   2094  1183 1291 1623 1630 1650
L2A81   2097  1061 1085 2107
L2A93   2109  1082 1366 2119
L2A9B   2115  2111
L2AA5   2121  1312 1385 1428
L2ABF   2135  2126
L2AC1   2138  1286 1316
L2AE7   2156  2146
L2AEB   2161  2176
L2AEC   2162  2169
L2AFD   2176  2188
L2B10   2189  2186
L2B11   2191  1487 1928 2198
L2B1B   2200  1282 2249
L2B26   2205  2202
L2B2D   2210  2219
L2B3C   2220  2213
L2B3D   2221  2228
L2B48   2229  2224
L2B4E   2233  2240
L2B58   2242  1217 1925
L2BE4   2386  2445 2471
L2BE5   2388  2438 2463
L2BED   2393  2424
L2C05   2405  2399
L2C0E   2411  2415
L2C17   2416  2413
L2C27   2426  2421
L2C2C   2429  2396
L2C2F   2430  2428
L2C49   2446  2442
L2C4D   2448  2458
L2C63   2463  2468
L2C66   2464  2435
L2C75   2472  2465
L2C7D   2481  0123 2231 2532
L2C8D   2491  2519
L2C90   2493  2495
L2C98   2497  2515
L2C9A   2498  2499
L2CA3   2504  2507
L2CB2   2513  2511
L2CB8   2517  2488
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CROSS REFERENCE LISTING

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L2CBD   2520  2490 2501
L2CC6   2528  2589 2596
L2CCF   2533  2453 2521
L2CDD   2540  2537
L2CDF   2541  2539
L2CE6   2544  2536
L2CF9   2554  2550
L2D01   2559  2534
L2D0F   2565  2547
L2D2A   2581  2553 2558 2577
L2D2D   2582  2561 2564
L2D2E   2583  2580
L2D32   2585  2542
L2D35   2586  2594
L2D47   2597  2544 2562
L2D4B   2599  2563 2578
L2D5B   2606  2612
L2D67   2614  2629
L2D71   2618  2625 2627
L2D82   2631  2603
L2D89   2636  2392 2598
L2DBC   2668  2653 2669
L2DC6   2672  2674
L2DD1   2678  2700
L2DDB   2682  2687
L2DE8   2691  2684
L2DF6   2698  2694
L2DF7   2699  2689
L2E1D   2723  2715 2721
L2E2A   2731  2697 2722 2733
L2E40   2745  1176 1219
L2E4E   2754  2749 2755
L2E55   2757  2710 2751
L2E58   2758  2752
L2E5B   2764  2654 2668 2699 2747 2754
L2E64   2770  2774
L2E70   2779  2772
L2E73   2781  2784
L2E79   2785  2782
L2E85   2800  0899 2443 2451 2543
L2E89   2804  2806
L2EA7   2819  2862
L2EBA   2831  2823
L2EBB   2832  2845
L2EBE   2833  2839 2852
L2EC2   2837  2809
L2EC4   2838  2841
L2EC9   2840  2811
L2ECD   2842  2813
L2ED0   2844  2815
L2ED4   2846  2817
L2EE0   2853  2825
L2EEE   2863  2447 2585
L2EF3   2865  2870
L2EF4   2866  2868
L2EFC   2872  2857
L2F02   2878  2874
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CROSS REFERENCE LISTING

```
L2F03   2879  2719 2818
L2F09   2888  2872
L2F11   2897  2408
L2F1B   2905  2873
L2F67   2985  2677
L2FBA   3080  2679
L2FCF   3106  0490 1123 1389 1392 1676 1679 1694 1899 1912 1915 1921 1944 1949 1964 2003
              2082 2091 2099 2117 2162 2194 2242 2245
L2FE4   3124  3108
L2FE7   3132  0412 1013 1407 1410 1465 1468 1877 1880 2103 2118
L2FFB   3148  3135
L4000   0012  0359 1146 2615
L4050   0013  2616
L4DC0   0014  2605
L4E20   0015  0272 0277 0297 2656
L4E21   0016  2664
L4E22   0017  0278 0286 0288 0296 0296 2661
L4E54   0019  2559 2583
L4E55   0020  0202 2670
L4E56   0021  2846
L4E57   0022  2731 2740 2804 2830
L4E58   0023  0983 2838
L4E59   0024  2735 2828
L4E5A   0025  2832 2853
L4E5B   0026  0684 0728
L4E5C   0027  0714 0738
L4E5E   0028  0702 0745 0754
L4E60   0029  2404 2409 2417
L4E62   0030  2393 2727
L4E63   0031  2418
L4E64   0032  1042 2400
L4E66   0033  0993 1000 2569
L4E6C   0034  2035
L4E6D   0035  2765
L4EB0   0043  0380 0393 0404
L4EB9   0044  0390
L4EC2   0045  0302 0352 0936 2486 2529 2651
L4FCE   0062  0966
L4FFF   0064  0612
LF      0068  2234
LINE    0647  0149
LIST    1189  0145
LOPINC  0055  1334 1395 2128 2153
LOPLMT  0056  1326 1411 2130 2151
LOPLN   0057  1336 1419 2132 2149
LOPPT   0058  1338 1368 1421 2134 2147
LOPVAR  0054  1025 1297 1319 1340 1378 1405 2123 2143 2155
LPERR   1446  1924
MU      0892  2261 2262
NEXT    1373  0148
NT      0038  0300 0938 2736 2829 2847
NX2     1428  1418
PAREN   1705  0125 1693
PORT0C  0073  0570 0957 2643
PORT0D  0074  0948
PORT0E  0075  0306 0944
PORT0F  0076  0946
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CROSS REFERENCE LISTING

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PORT10  0077  0225
PORT11  0078  0214 0229
PORT12  0079  0251 0933 2493 2502 2504 2512
PORT16  0080  0233
PORT4   0069  0235
PORT5   0070  0236
PORT6   0071  0238
PORT7   0072  0239
PR0     1242  1273
PR1     1255  1245
PR2     1235  1231
PR3     1263  1238 1270
PR6     1275  1261
PR8     1279  1256
PRINT   1227  0157
PRTSTG  2160  1017 1218 1908 1932
PX      0424  2339 2340
QHOW    2093  0690 1251 1593 1664 1723 1725 1844 1941 1981 2073
QSORRY  1935  1079 2142
QT3     2183  2174
QTSTG   2171  1255 1454
QWHAT   1905  0464 0578 0915 1305 1374 1484 1508 1717 1868 1885
RETURN  1302  0153
RM      0042  1657
RND     1719  2315 2316
RUN     1167  0147
RUNNXL  1168  1240 1897 2179
RUNSML  1176  1233 1441 1891
RUNTSL  1171  1185 1300 1443
SETVAL  1864  1317
ST1     1015  2757
ST2     1024  1022
ST3     1027  1086
ST4     1065  1056
STACK   0063  1021
START   1021  1070 1170 1444 2305 2306
STKGOS  0051  1026 1294 1299 1302 1308
STKINP  0052  1375 1386 1446 1499
STKLMT  0061  2138
STVAL   1108  1092 1094
SZ      1752  1984 2351 2352
TAB1    2255  1119
TAB4    2313  1670
TAB8    2357  1512
TAPEIN  2651  0129 0315 0320 0339 0362 0851 2429 2659 2712
TR      1773  2323 2324
TSTV    1970  0462 1108 1373 1456 1482 1673
TV      0903  2257 2258
TV1     1998  1976
TXTBGN  0065  1011 1167 1942
TXTEND  0066  1076 1755
TXTUNF  0018  1006 1060 1064 1066 1080 1752 1987
VARNXT  0053
XP11    1515  2359 2360
XP12    1520  2363 2364
XP13    1525  2367 2368
XP14    1531  2375 2376
```

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XP15    1538  2371 2372
XP16    1543  2379 2380
XP17    1548  2382 2383
XP18    1551  1515 1520 1525 1531 1538 1543
XP21    1572  1569
XP22    1576  1575
XP23    1577  1590 1592
XP24    1583  1602
XP25    1595  1580
XP26    1599  1571
XP31    1605  1668
XP32    1624  1619
XP33    1629  1632
XP34    1635  1608
XP35    1661  1627 1633
XP40    1673  2354 2355
XP41    1686  1674
XP42    1715  1598 1638
XP43    1717  1700 1708 1714
XV      0041  0669 0679
```