

fig-FORTH FOR PACE  
ASSEMBLY SOURCE LISTING

RELEASE 1  
WITH COMPILER SECURITY  
AND  
VARIABLE LENGTH NAMES

MAY 1979

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bPUB. LISTING 79/05/05.TITLE: FORTH NUCLEUS FOR PACE

```
1          .TITLE  FORTH,'NUCLEUS FOR PACE'
2          ;
3          .ASM    TI
4          ;
5          PART   =      1
6          ;
7          .LIST   PART=1
8          ;
9          ;*****
10         ;*      THIS IMPLEMENTATION OF THE FORTH LANGUAGE      *
11         ;*      IS ONE OF A UNIFORM SERIES DEVELOPED BY THE    *
12         ;*
13         ;*      FORTH INTEREST GROUP                          *
14         ;*      P.O. BOX 1105                                  *
15         ;*      SAN CARLOS, CA 94070                          *
16         ;*
17         ;*      PACE IMPLEMENTATION BY DAVID KILBRIDGE        *
18         ;*****
19         ;
20         0000          .ASECT
21         0010          .=      0010
22         ;
23         ;*****
24         ;*      BOC AND FLAG ABBREVIATIONS                    *
25         ;*****
26         ;
27         0001          Z      =      1
28         0002          P      =      2
29         0003          BITO   =      3
30         0005          NZ     =      5
31         0007          CRY    =      7
32         0008          LINK   =      8
33         000A          CSET   =      10
34         000B          M      =      11
35         ;
36         ;*****
37         ;*      MEMORY ASSIGNMENTS                            *
38         ;*****
39         ;
40         3FC0          HIBLK  =      03FC0      ; HIGHEST BLOCK FWA
41         2000          LOBLK  =      02000      ; LOWEST BLOCK FWA
42         0080          BLKSIZ =      128        ; BLOCK SIZE IN BYTES
43         0008          NBUF   =      8          ; NO OF BLOCK BUFFERS
44         2000          TOPMEM =      02000      ; LWA+1 OF DISK BUFFS
45         0210          BUFMEM =      BLKSIZ/2+2*NBUF ; LTH OF BUFFER AREA
46         1DF0          BUFFS  =      TOPMEM-BUFMEM ; FWA OF DISK BUFFERS
47         1DD0          UVARs  =      BUFFS-32    ; START OF USER AREA
48         0100          DICT   =      0100        ; FWA OF DICTIONARY
49         ;
50         ;*****
51         ;*      START-UP LITERALS                              *
52         ;*****
53         ;
54         0010 9811 A  ORIG:   JMP      @.+1      ; COLD
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55 0011 088C A      .WORD  CENT      ; ENTRY
56 0012 9813 A      JMP    @.+1      ; WARM
57 0013 0892 A      .WORD  WENT      ; ENTRY
58 0014 0000 A  CPU: .WORD  0          ; RESERVED
59 0015 0000 A  REV: .WORD  0          ; RESERVED
60 0016 0C65 A  FORTH0: .WORD  TASK-4    ; TOP WORD IN DICT
61 0017 005F A  BACKSP: .WORD  005F      ; BACKSPACE CHARACTER
62 0018 1DD0 A  U0:    .WORD  UVARS      ; START OF USER AREA
63 0019 1D8F A  S0:    .WORD  UVARS-65    ; TOP OF EMPTY STACK
64 001A 1DD0 A  R0:    .WORD  UVARS      ; TOP OF RETURN STACK
65 001B 1D8F A  TIB0: .WORD  UVARS-65    ; SOURCE BUFFER ORIG
66 001C 001F A  WIDTH0: .WORD  31        ; INITIAL NAME LENGTH
67 001D 0000 A  WARN0: .WORD  0          ; ERROR WARNING MODE
68 001E 0C65 A  FENCE0: .WORD  TASK-4    ; BARRIER FOR FORGET
69 001F 0C6B A  DPO:   .WORD  FIN        ; FWA OF FREE STORAGE
70 0020 0843 A  VOCLO: .WORD  FORTH+4    ; INITIAL VOC-LINK
71

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                                .PAGE
72                                ;
73                                ;*****
74                                ;*          FORTH REGISTERS          *
75                                ;*****
76                                ;
77 0021 0000 A  RP:    .WORD  0          ; RETURN STACK PTR
78 0022 0000 A  UP:    .WORD  0          ; USER POINTER
79          0002  X      =      2          ; INDEX
80          0003  Y      =      3          ; REGISTERS
81          0001  IP     =      1          ; INTERPRETIVE PTR
82          0002  W      =      X          ; FORTH CODE PTR
83          0003  SP     =      Y          ; FORTH STACK PTR
84                                ;
85                                ;*****
86                                ;          INSTALLATION-DEPENDENT ROUTINES
87                                ;*****
88                                ;
89          7E3B  GETC   =      07E3B
90          7E44  PUTC   =      07E44
91          7ECC  INTEST =      07ECC
92                                ;
93 0023 5000 A  INIT:  LI      0,0
94 0024 0800 A          CRF      0
95 0025 6700 A          PULL     Y
96 0026 5109 A          LI      1,9
97 0027 6400 A          PULL     0
98 0028 79FF A          AISZ    1,-1
99 0029 1827 A          JMP      .-2
100 002A 3100 A          PFLG    1

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```

101 002B 6300 A      PUSH      Y
102 002C 1B00 A      JMP        (Y)
103
104          0000      ;          .BSECT
          00F6          ;          .=.+00F6          ; POINTER AREA
105          002D      ;          .ASECT
106          ;*****
107          ;*          AIDS FOR NAME FIELD CONSTRUCTION          *
108          ;*****
109          ;
110          .FORM     HEAD,1(1),1,1(0),5,1,7
111          ;
112          0000      ORD      =          0          ; ORDIN. WD PREC BIT
113          0001      IMM      =          1          ; IMMED. WD PREC BIT
114          0001      SHORT     =          1          ; FOR 1-CHAR NAMES
115          0000      LONG      =          0          ; FOR LONGER NAMES
116          8000      EVEN      =          08000        ; EVEN-LTH STOP BIT
117          0080      ODD       =          00080        ; ODD-LTH STOP BIT
118

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 DICTIONARY

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          .PAGE      'DICTIONARY'
119          ;
120          002D      ;          .ASECT
121          0100      .=          DICT
122          ;
123          ;*****
124          ;*          LIT, PUSH, PUT, NEXT          *
125          ;*****
126          ;
127 0100 834C A      HEAD      ORD,3,LONG,'L'/256
128 0101 49D4 A      .WORD     'IT'+ODD,0000
          0102 0000 A
129 0103 0104 A      LIT:      .WORD     .+1
130 0104 5E40 A      RCPY      IP,X          ; PICK UP
131 0105 C200 A      LD        0,(X)        ; VALUE
132 0106 7901 A      AISZ      IP,1          ; STEP IP OVER
133 0107 7BFF A      PUSH:     AISZ      SP,-1        ; EXTEND STACK
134 0108 D300 A      PUT:      ST        0,(SP)        ; STORE VALUE
135 0109 5E40 A      NEXT:     RCPY      IP,X
136 010A 7901 A      AISZ      IP,1          ; INCREMENT IP
137 010B CA00 A      LD        W,(X)        ; ADDR OF NEXT WORD
138 010C 9A00 A      JMP        @(W)          ; JUMP THRU CODE ADDR
139          ;
140          ;*****
141          ;*          EXECUTE          *
142          ;*****
143          ;
144 010D 8745 A      HEAD      ORD,7,LONG,'E'/256
145 010E 5845 A      .WORD     'XE','CU','TE'+ODD,LIT-3
          010F 4355 A
          0110 54C5 A
          0111 0100 A

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146 0112 0113 A EXEC: .WORD .+1
147 0113 CB00 A LD W,0(SP) ; FETCH CODE ADDR
148 0114 7B01 A AISZ SP,1 ; POP STACK
149 0115 9A00 A JMP @(W) ; JUMP THRU CODE ADDR
150 ;
151 ;*****
152 ;* BRANCH, OBRANCH *
153 ;*****
154 ;
155 0116 8642 A HEAD ORD,6,LONG,'B'/256
156 0117 5241 A .WORD 'RA','NC','H'+EVEN,EXEC-5
0118 4E43 A
0119 C820 A
011A 010D A
157 011B 011C A BRAN: .WORD .+1
158 011C 5E40 A RCPY IP,X ; ADD OFFSET
159 011D E600 A ADD IP,(X) ; TO IP
160 011E 19EA A JMP NEXT
161 ;
162 011F 8730 A HEAD ORD,7,LONG,'O'/256
163 0120 4252 A .WORD 'BR','AN','CH'+ODD,BRAN-5
0121 414E A
0122 43C8 A

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0123 0116 A
164 0124 0125 A ZBRAN: .WORD .+1
165 0125 C300 A LD 0,0(SP) ; GET BOOLEAN
166 0126 7B01 A AISZ SP,1 ; POP STACK
167 0127 41F4 A BOC Z,BRAN+1 ; IF BOOLEAN = 0
168 0128 7901 A AISZ IP,1 ; STEP IP OVER OFFSET
169 0129 19DF A JMP NEXT
170 ;
171 ;*****
172 ;* LOOP CONTROL *
173 ;*****
174 ;
175 012A 8628 A HEAD ORD,6,LONG,'('/256
176 012B 4C4F A .WORD 'LO','OP','')+EVEN,ZBRAN-5
012C 4F50 A
012D A920 A
012E 011F A
177 012F 0130 A XLOOP: .WORD .+1
178 0130 5001 A LI 0,1 ; INCREMENT = 1
179 0131 C821 A LD X,RP ; GET RETURN POINTER
180 0132 E200 A ADD 0,(X) ; UPDATE
181 0133 D200 A ST 0,(X) ; INDEX
182 0134 3780 A SFLG CRY ; SUBTRACT
183 0135 9201 A SUBB 0,1(X) ; LIMIT
184 0136 4BE5 A BOC M,BRAN+1 ; IF LIMIT > INDEX
185 0137 7901 A XLOOP1: AISZ IP,1 ; STEP IP OVER OFFSET
186 0138 7A02 A AISZ X,2 ; POP INDEX AND LIMIT
187 0139 D821 A ST X,RP ; FROM RETURN STACK
188 013A 19CE A JMP NEXT

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189          ;
190 013B 8728 A      HEAD      ORD,7,LONG,'('/256
191 013C 2B4C A      .WORD     '+L','OO','P')+ODD,XLOOP-5
      013D 4F4F A
      013E 50A9 A
      013F 012A A
192 0140 0141 A      XPLOOP:  .WORD     .+1
193 0141 6100 A      PUSH      IP          ; SAVE IP
194 0142 C700 A      LD        1,0(SP)      ; GET INCREMENT
195 0143 7B01 A      AISZ     SP,1        ; POP STACK
196 0144 C821 A      LD        X,RP        ; GET RETURN POINTER
197 0145 C200 A      LD        0,(X)       ; GET INDEX
198 0146 6840 A      RADD     1,0         ; ADD INCREMENT
199 0147 D200 A      ST        0,(X)       ; UPDATE INDEX
200 0148 3780 A      SFLG    CRY          ; SUBTRACT
201 0149 9201 A      SUBB    0,1(X)       ; LOOP LIMIT
202 014A 4104 A      BOC     Z,PULL       ; IF INDEX = LIMIT
203 014B 5840 A      RXOR    1,0         ; COMBINE SIGN BITS
204 014C 6500 A      PULL    IP          ; RESTORE IP
205 014D 4BCE A      BOC     M,BRAN+1     ; IND<LIM XOR INC<0
206 014E 19E8 A      JMP     XLOOP1
207 014F 6500 A      PULL:   PULL    IP          ; RESTORE IP
208 0150 19E6 A      JMP     XLOOP1
209          ;
210          ;*****
211          ;*          (DO), POPTWO, POP, I          *

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212          ;*****
213          ;
214 0151 8428 A      HEAD      ORD,4,LONG,'('/256
215 0152 444F A      .WORD     'DO','')+EVEN,XPLOOP-5
      0153 A920 A
      0154 013B A
216 0155 0156 A      XDO:    .WORD     .+1
217 0156 C301 A      LD        0,1(SP)      ; MOVE LIMIT
218 0157 AC21 A      DSZ     RP          ; TO RETURN
219 0158 B021 A      ST        0,@RP       ; STACK
220 0159 C300 A      LD        0,0(SP)      ; MOVE INITIAL
221 015A AC21 A      DSZ     RP          ; INDEX TO RETURN
222 015B B021 A      ST        0,@RP       ; STACK
223 015C 7B01 A      POP2:   AISZ     SP,1        ; POP ONE ITEM
224 015D 7B01 A      POP:    AISZ     SP,1        ; POP ONE ITEM
225 015E 19AA A      JMP     NEXT
226          ;
227 015F 81C9 A      HEAD      ORD,1,SHORT,'I'/256
228 0160 0151 A      .WORD     XDO-4
229 0161 028A A      I:      .WORD     R+1          ; GET FROM RTN STACK
230          ;

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231 ;*****
232 ;*                               DIGIT                               *
233 ;*****
234 ;
235 0162 8544 A      HEAD      ORD,5,LONG,'D'/256
236 0163 4947 A      .WORD     'IG','IT'+ODD,I-2
      0164 49D4 A
      0165 015F A
237 0166 0167 A      DIGIT:   .WORD     .+1
238 0167 C301 A      LD         0,1(SP)      ; GET ASCII
239 0168 78D0 A      AISZ      0,-0030
240 0169 4B0B A      BOC       M,BAD        ; ASCII < 30
241 016A 9DOC A      SKG       0,NINE
242 016B 1903 A      JMP       CKBASE      ; 30 <= ASCII <= 39
243 016C 78F9 A      AISZ      0,-7
244 016D 9D09 A      SKG       0,NINE
245 016E 1906 A      JMP       BAD        ; 39 < ASCII < 41
246 016F 9F00 A      CKBASE:  SKG       0,0(SP)
247 0170 F300 A      SKNE     0,0(SP)
248 0171 1903 A      JMP       BAD        ; ASCII >= BASE
249 0172 D301 A      ST         0,1(SP)      ; PUT DIGIT SECOND
250 0173 5001 A      LI         0,1        ; AND TRUE FLAG
251 0174 1993 A      JMP       PUT        ; ON BOTTOM
252 0175 5000 A      BAD:    LI         0,0        ; LEAVE FALSE FLAG
253 0176 98F6 I      JMP       BIN        ; ON BOTTOM
254 0177 0009 A      NINE:   .WORD     9
255 ;
256 ;*****
257 ;*                               (FIND)                               *
258 ;*****
259 ;
260 0178 8628 A      HEAD      ORD,6,LONG,'('/256
261 0179 4649 A      .WORD     'FI','ND','')+EVEN,DIGIT-4
      017A 4E44 A

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      017B A920 A
      017C 0162 A
262 017D 017E A      PFIND:   .WORD     .+1
263 017E 6100 A      PUSH     IP          ; SAVE IP
264 017F 7BFF A      AISZ     SP,-1       ; EXTEND STACK
265 0180 CB01 A      LD       X,1(SP)     ; GET NFA
266 0181 A302 A      NEWNAM: LD       0,@2(SP) ; FIRST WD OF STRING
267 0182 C600 A      LD       1,(X)      ; FIRST WD OF NAME
268 0183 5840 A      RXOR    1,0
269 0184 A923 A      AND     0,X3FFF     ; CLEAR START & PREC
270 0185 B923 A      SKAZ    0,X7F7F     ; CMP LTH, FIRST CHAR
271 0186 1915 A      JMP     MISS        ; IF MISMATCH
272 0187 450C A      BOC     NZ,FOUND    ; IF ONLY ONE CHAR
273 0188 C702 A      LD     1,2(SP)     ; INITIALIZE
274 0189 D700 A      ST     1,0(SP)     ; STRING POINTER
275 018A 7A01 A      CYCLE:  AISZ    X,1   ; BUMP NAME AND
276 018B 8F00 A      ISZ    0(SP)     ; STRING POINTERS

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277 018C A300 A      LD      0,@0(SP)      ; NEXT WD OF STRING
278 018D C600 A      LD      1,(X)         ; NEXT WD OF NAME
279 018E 5840 A      RXOR   1,0
280 018F 4201 A      BOC    P,.+2         ; IF HI BYTE IS LAST,
281 0190 A919 A      AND    0,XFF00       ; CLEAR LOW BYTE
282 0191 B917 A      SKAZ   0,X7F7F      ; COMPARE CHARS
283 0192 1909 A      JMP    MISS         ; IF MISMATCH
284 0193 41F6 A      BOC    Z,CYCLE      ; IF NO STOP BIT
285 0194 7A03 A      FOUND: AISZ        X,3                ; FORM PFA
286 0195 DB02 A      ST     X,2(SP)      ; PUT THIRD ON STACK
287 0196 A301 A      LD     0,@1(SP)    ; FIRST WD OF NAME
288 0197 2C10 A      SHR   0,8,0        ; GET LENGTH BYTE
289 0198 D301 A      ST     0,1(SP)     ; PUT SECOND ON STACK
290 0199 5001 A      LI    0,1          ; BOOLEAN TRUE
291 019A 6500 A      PULL  IP           ; RESTORE IP
292 019B 98F7 I      JMP    PUT         ; BOOLEAN ON BOTTOM
293 019C B90E A      MISS: SKAZ        0,X8080 ; TEST FOR A STOP BIT
294 019D 1903 A      JMP    ENDNAM      ; IF PRESENT
295 019E 7A01 A      AISZ  X,1          ; BUMP NAME POINTER
296 019F C200 A      LD     0,(X)       ; GET NEXT WORD
297 01A0 19FB A      JMP    MISS        ; CONTINUE SCANNING
298 01A1 CA01 A      ENDNAM: LD        X,1(X) ; FETCH LINK
299 01A2 DB01 A      ST     X,1(SP)    ; NEW NFA
300 01A3 7A00 A      AISZ  X,0          ; TEST FOR LINK = 0
301 01A4 19DC A      JMP    NEWNAM      ; IF NOT DONE
302 01A5 DB02 A      ST     X,2(SP)    ; PUT BOOLEAN FALSE
303 01A6 6500 A      PULL  IP           ; RESTORE IP
304 01A7 19B4 A      JMP    POP2
305
306 01A8 3FFF A      X3FFF: .WORD      03FFF
307 01A9 7F7F A      X7F7F: .WORD      07F7F
308 01AA FF00 A      XFF00: .WORD      0FF00
309 01AB 8080 A      X8080: .WORD      08080
310
311 ;
312 ;*****
313 ;*                               ENCLOSE *
314 ;*****

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315 ; SCAN SOURCE STRING, PACKED TWO CHARACTERS/WORD,
316 ; FOR DELIMITER ON TOP OF STACK, OR ASCII NULL.
317 ;
318 01AC 8745 A      HEAD   ORD,7,LONG,'E'/256
319 01AD 4E43 A      .WORD 'NC','LO','SE'+ODD,PFIND-5
    01AE 4C4F A
    01AF 53C5 A
    01B0 0178 A
320 01B1 01B2 A      ENCL: .WORD      .+1
321 01B2 6100 A      PUSH  IP           ; SAVE IP
322 01B3 7BFE A      AISZ  SP,-2        ; EXTEND STACK
323 01B4 C302 A      LD     0,2(SP)    ; GET DELIMITER
324 01B5 A932 A      AND   0,RMASK     ; USE LOWER
325 01B6 5D00 A      RCPY  0,1         ; BYTE ONLY

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326 01B7 2910 A      SHL      1,8,0      ; DOUBLE UP
327 01B8 6900 A      RADD     0,1        ; DELIMITER
328 01B9 C303 A      LD       0,3(SP)   ; GET BYTE ADDRESS
329 01BA 3800 A      PFLG    LINK       ;
330 01BB 2403 A      ROR     0,1,1     ; CONVERT ADDRESS
331 01BC D300 A      ST      0,0(SP)   ; SAVE WORD ADDRESS
332 01BD 5200 A      LI      X,0       ; CLEAR COUNT
333 01BE A300 A      NEW1:  LD      0,@0(SP) ; GET NEXT 2 BYTES
334 01BF 5840 A      RXOR    1,0       ; COMPARE WITH DELIMS
335 01C0 4803 A      BOC     LINK,RT1   ; IF START ADDR ODD
336 01C1 B925 A      SKAZ    0,LMASK   ; TEST LEFT BYTE
337 01C2 1908 A      JMP     LNDEL     ; IF NOT DELIM
338 01C3 7A01 A      AISZ    X,1       ; BUMP COUNT
339 01C4 B923 A      RT1:   SKAZ    0,RMASK ; TEST RIGHT BYTE
340 01C5 1904 A      JMP     RNDEL     ; IF NOT DELIM
341 01C6 7A01 A      AISZ    X,1       ; BUMP COUNT
342 01C7 3800 A      PFLG    LINK       ; LEFT BYTE OF
343 01C8 8F00 A      ISZ     0(SP)     ; FOLLOWING WORD
344 01C9 19F4 A      JMP     NEW1      ; IS NEXT
345 01CA 3880 A      RNDEL: SFLG    LINK   ; REMEMBER WHICH BYTE
346 01CB DB02 A      LNDEL: ST      X,2(SP) ; SET FC OFFSET
347 01CC 4810 A      BOC     LINK,RT2   ; RESUME AT SAME BYTE
348 01CD A300 A      NEW2:  LD      0,@0(SP) ; GET DATA
349 01CE DB01 A      ST      X,1(SP)   ; MAYBE EW OFFSET
350 01CF B917 A      SKAZ    0,LMASK   ; TEST FOR NULL
351 01D0 1905 A      JMP     NONUL    ;
352 01D1 DB00 A      NUL:   ST      X,0(SP) ; NC OFFSET
353 01D2 FB02 A      SKNE    X,2(SP)   ; IS NC = FC?
354 01D3 8F01 A      ISZ     1(SP)     ; YES, BUMP EW
355 01D4 6500 A      PULL    IP        ; RESTORE IP
356 01D5 98F8 I      JMP     NEXT     ;
357 01D6 7A01 A      NONUL: AISZ    X,1   ; BUMP COUNT
358 01D7 5840 A      RXOR    1,0       ;
359 01D8 B90E A      SKAZ    0,LMASK   ; TEST FOR DELIM
360 01D9 1903 A      JMP     RT2      ;
361 01DA DB00 A      DELIM: ST      X,0(SP) ; NC OFFSET
362 01DB 6500 A      PULL    IP        ; RESTORE IP
363 01DC 98F8 I      JMP     NEXT     ;
364 01DD 5840 A      RT2:   RXOR    1,0   ;
365 01DE DB01 A      ST      X,1(SP)   ; MAYBE EW
366 01DF A908 A      AND     0,RMASK   ;

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```

367 01E0 41F0 A      BOC     Z,NUL     ; TEST FOR NULL
368 01E1 7A01 A      AISZ    X,1       ; BUMP COUNT
369 01E2 5840 A      RXOR    1,0       ;
370 01E3 A904 A      AND     0,RMASK   ;
371 01E4 41F5 A      BOC     Z,DELIM   ; TEST FOR DELIM
372 01E5 8F00 A      ISZ     0(SP)     ; BACK FOR
373 01E6 19E6 A      JMP     NEW2      ; NEXT WORD
374 01E7 FF00 A      LMASK: .WORD    OFF00
375 01E8 00FF A      RMASK: .WORD    000FF
376 ;

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377 ;*****
378 ;*                TERMINAL VECTORS                *
379 ;*****
380 ;
381 ; THESE WORDS VECTOR TO INSTALLATION-SPECIFIC CODE
382 ;
383 01E9 8445 A          HEAD    ORD,4,LONG,'E'/256
384 01EA 4D49 A          .WORD   'MI','T'+EVEN,ENCL-5
      01EB D420 A
      01EC 01AC A
385 01ED 0A49 A  EMIT:    .WORD   Pemit
386 ;
387 01EE 834B A          HEAD    ORD,3,LONG,'K'/256
388 01EF 45D9 A          .WORD   'EY'+ODD,EMIT-4
      01F0 01E9 A
389 01F1 0A4D A  KEY:    .WORD   PKEY
390 ;
391 01F2 893F A          HEAD    ORD,9,LONG,'?'/256
392 01F3 5445 A          .WORD   'TE','RM','IN','AL'+ODD,KEY-3
      01F4 524D A
      01F5 494E A
      01F6 41CC A
      01F7 01EE A
393 01F8 0A4F A  QTERM:  .WORD   PQTERM
394 ;
395 01F9 8243 A          HEAD    ORD,2,LONG,'C'/256
396 01FA D220 A          .WORD   'R'+EVEN,QTERM-6
      01FB 01F2 A
397 01FC 0A53 A  CR:     .WORD   PCR
398 ;
399 ;*****
400 ;*                MOVE                *
401 ;*****
402 ;
403 ; NOTE THAT THIS WORD MOVES DATA IN 16-BIT UNITS.
404 ;
405 01FD 844D A          HEAD    ORD,4,LONG,'M'/256
406 01FE 4F56 A          .WORD   'OV','E'+EVEN,CR-3
      01FF C520 A
      0200 01F9 A
407 0201 0202 A  MOVE:   .WORD   .+1
408 0202 C300 A          LD      0,0(SP)          ; GET COUNT
409 0203 410A A          BOC     Z,MOVE2          ; IF ZERO
410 0204 6100 A          PUSH   IP              ; SAVE IP
411 0205 5D00 A          RCPY    0,1

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412 0206 CB02 A          LD      X,2(SP)          ; SOURCE ADDRESS
413 0207 C200 A  MOVE1:  LD      0,(X)          ; GET DATA ITEM
414 0208 B301 A          ST      0,@1(SP)        ; STORE AT DEST
415 0209 7A01 A          AISZ   X,1             ; INCREMENT
416 020A 8F01 A          ISZ    1(SP)           ; ADDRESSES
417 020B 79FF A          AISZ   1,-1            ; DECREMENT COUNT
418 020C 19FA A          JMP     MOVE1          ; UNTIL DONE

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419 020D 6500 A          PULL      IP                ; RESTORE IP
420 020E 7B03 A  MOVE2:  AISZ      SP,3            ; POP ARGUMENTS
421 020F 98F8 I          JMP        NEXT
422                      ;
423                      ;*****
424                      ;*                U*, FOR 16 BITS          *
425                      ;*****
426                      ;
427 0210 8255 A          HEAD      ORD,2,LONG,'U'/256
428 0211 AA20 A          .WORD     '*'+EVEN,MOVE-4
      0212 01FD A
429 0213 0214 A  USTAR:  .WORD     .+1
430 0214 6100 A          PUSH      IP                ; SAVE IP
431 0215 C300 A          LD        0,0(SP)          ; GET MULTIPLIER
432 0216 5100 A          LI        1,0            ; CLEAR RESULT
433 0217 5210 A          LI        X,16           ; LOOP COUNT
434 0218 7000 A          CAI       0,0            ; COMPLEMENT MPLR
435 0219 6940 A  LP:    RADD      1,1            ; SHIFT LO INTO CRY
436 021A 7400 A          RADC      0,0            ; ROTATE MPLR LEFT
437 021B 4A02 A          BOC      CSET, TEST      ; TEST FOR ADD
438 021C E701 A          ADD      1,1(SP)        ; ADD IF MPLR BIT=1
439 021D 9105 A          SUBB     0, MINUS1      ; ADD CARRY TO HI
440 021E 7AFF A  TEST:  AISZ      X,-1          ; DECR LOOP COUNT
441 021F 19F9 A          JMP      LP            ; REPEAT UNTIL LIMIT
442 0220 D701 A          ST        1,1(SP)      ; PUT LO-ORDER SECOND
443 0221 6500 A          PULL     IP                ; RESTORE IP
444 0222 98F7 I          JMP      PUT            ; HI-ORDER ON BOTTOM
445 0223 FFFF A  MINUS1: .WORD     -1
446                      ;
447                      ;*****
448                      ;*                U/, FOR 32 BITS          *
449                      ;*****
450                      ;
451 0224 8255 A          HEAD      ORD,2,LONG,'U'/256
452 0225 AF20 A          .WORD     '/' +EVEN,USTAR-3
      0226 0210 A
453 0227 0228 A  USLASH: .WORD     .+1
454 0228 6100 A          PUSH      IP                ; SAVE IP
455 0229 C701 A          LD        1,1(SP)        ; HI-ORDER DIVIDEND
456 022A C302 A          LD        0,2(SP)        ; LO-ORDER DIVIDEND
457 022B CB00 A          LD        X,0(SP)        ; GET DIVISOR
458 022C 7201 A          CAI      X,1            ; SAVE -(DIVISOR) FOR
459 022D DB01 A          ST        X,1(SP)      ; CONVENIENCE
460 022E 5210 A          LI        X,16           ; LOOP COUNT
461 022F 2803 A          SHL      0,1,1          ; SHIFT LO INTO LINK
462 0230 2103 A  POOL:  ROL      1,1,1      ; ROTATE HI WITH LINK
463 0231 2003 A          ROL      0,1,1          ; ROTATE HI INTO QUOT
464 0232 E701 A          ADD      1,1(SP)        ; SUBTR DIVSR FROM HI

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465 0233 9107 A          SUBB     0,MINI          ; ADD CARRY TO QUOT
466 0234 4301 A          BOC      BIT0, .+2      ; IF QUOT BIT = 0,
467 0235 E700 A          ADD      1,0(SP)        ; ADD DIVISOR BACK

```

```

468 0236 7AFF A      AISZ      X,-1      ; DECREMENT LOOP CNT
469 0237 19F8 A      JMP      POOL      ; REPEAT UNTIL LIMIT
470 0238 D702 A      ST       1,2(SP)   ; REMAINDER SECOND
471 0239 6500 A      PULL     IP        ; RESTORE IP
472 023A 1967 A      JMP      BIN       ; QUOTIENT ON BOTTOM
473 023B FFFF A      MINI:    .WORD    -1
474
475 ;*****
476 ;*          LOGICALS          *
477 ;*****
478 ;
479 023C 8341 A      HEAD     ORD,3,LONG,'A'/256
480 023D 4EC4 A      .WORD    'ND'+ODD,USLASH-3
      023E 0224 A
481 023F 0240 A      AND:     .WORD    .+1
482 0240 C301 A      LD       0,1(SP)   ; GET SECOND
483 0241 AB00 A      AND     0,0(SP)   ; AND WITH BOTTOM
484 0242 195F A      JMP      BIN       ; REMOVE ARGS
485 ;
486 0243 824F A      HEAD     ORD,2,LONG,'O'/256
487 0244 D220 A      .WORD    'R'+EVEN,AND-3
      0245 023C A
488 0246 0247 A      OR:      .WORD    .+1
489 0247 C301 A      LD       0,1(SP)   ; GET SECOND
490 0248 A700 A      OR       0,0(SP)   ; OR WITH BOTTOM
491 0249 1958 A      JMP      BIN       ; REMOVE ARGS
492 ;
493 024A 8358 A      HEAD     ORD,3,LONG,'X'/256
494 024B 4FD2 A      .WORD    'OR'+ODD,OR-3
      024C 0243 A
495 024D 024E A      XOR:     .WORD    .+1
496 024E C301 A      LD       0,1(SP)   ; GET SECOND
497 024F CB00 A      LD       X,0(SP)   ; GET BOTTOM
498 0250 5880 A      RXOR    X,0        ; FORM EXCLUSIVE OR
499 0251 1950 A      JMP      BIN       ; REMOVE ARGS
500 ;
501 ;*****
502 ;*          STACK INITIALIZATION          *
503 ;*****
504 ;
505 0252 8353 A      HEAD     ORD,3,LONG,'S'/256
506 0253 50C0 A      .WORD    'P@'+ODD,XOR-3
      0254 024A A
507 0255 0256 A      SPAT:    .WORD    .+1
508 0256 5CC0 A      RCPY     SP,0      ; STACK POINTER
509 0257 98F9 I      JMP      PUSH     ; PUSH ON STACK
510 ;
511 0258 8353 A      HEAD     ORD,3,LONG,'S'/256
512 0259 50A1 A      .WORD    'P!'+ODD,SPAT-3
      025A 0252 A
513 025B 025C A      SPSTOR: .WORD    .+1
514 025C C822 A      LD       X,UP     ; GET USER POINTER

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```

515 025D CE03 A          LD      SP,3(X)          ; FETCH SPO
516 025E 98F8 I          JMP      NEXT
517
;
518 025F 8352 A          HEAD    ORD,3,LONG,'R'/256
519 0260 50A1 A          .WORD   'P!'+ODD,SPSTOR-3
      0261 0258 A
520 0262 0263 A          RPSTOR: .WORD    .+1
521 0263 C822 A          LD      X,UP              ; GET USER POINTER
522 0264 C204 A          LD      0,4(X)           ; FETCH RO
523 0265 D021 A          ST      0,RP              ; SET RETURN POINTER
524 0266 98F8 I          JMP      NEXT
525
;
526 0267 823B A          HEAD    ORD,2,LONG,';'/256
527 0268 D320 A          .WORD   'S'+EVEN,RPSTOR-3
      0269 025F A
528 026A 026B A          SEMIS:  .WORD    .+1
529 026B A021 A          LD      0,@RP             ; RESTORE
530 026C 5D00 A          RCPY    0,IP              ; OLD IP
531 026D 8C21 A          ISZ     RP                 ; POP RETURN STACK
532 026E 98F8 I          JMP      NEXT
533
;
534
;*****
535
;*          RETURN STACK WORDS          *
536
;*****
537
;
538 026F 854C A          HEAD    ORD,5,LONG,'L'/256
539 0270 4541 A          .WORD   'EA','VE'+ODD,SEMIS-3
      0271 56C5 A
      0272 0267 A
540 0273 0274 A          LEAVE:  .WORD    .+1
541 0274 C821 A          LD      X,RP              ; GET RETURN POINTER
542 0275 C200 A          LD      0,0(X)           ; GET LOOP INDEX
543 0276 D201 A          ST      0,1(X)          ; MAKE LIMIT EQUAL
544 0277 98F8 I          JMP      NEXT
545
;
546 0278 823E A          HEAD    ORD,2,LONG,'>'/256
547 0279 D220 A          .WORD   'R'+EVEN,LEAVE-4
      027A 026F A
548 027B 027C A          TOR:    .WORD    .+1
549 027C AC21 A          DSZ     RP                 ; EXTEND RETURN STACK
550 027D C300 A          LD      0,(SP)           ; GET DATA ITEM
551 027E B021 A          ST      0,@RP           ; PUT ON RETURN STACK
552 027F 98FA I          JMP      POP              ; POP FROM DATA STACK
553
;
554 0280 8252 A          HEAD    ORD,2,LONG,'R'/256
555 0281 BE20 A          .WORD   '>'+EVEN,TOR-3
      0282 0278 A
556 0283 0284 A          FROMR:  .WORD    .+1
557 0284 A021 A          LD      0,@RP             ; GET FROM RETURN STK
558 0285 8C21 A          ISZ     RP                 ; POP RETURN STACK
559 0286 98F9 I          JMP      PUSH             ; PUSH ON DATA STACK
560
;
561 0287 81D2 A          HEAD    ORD,1,SHORT,'R'/256
562 0288 0280 A          .WORD   FROMR-3
563 0289 028A A          R:      .WORD    .+1

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564 028A A021 A          LD      0,@RP          ; GET NONDESTRUCTIVE
565 028B 98F9 I          JMP      PUSH          ; PUSH ON DATA STACK
566
567 ;
568 ;*****
568 ;*                TESTS AND LOGICALS                *
569 ;*****
570 ;
571 028C 8230 A          HEAD    ORD,2,LONG,'0'/256
572 028D BD20 A          .WORD   '='+EVEN,R-2
    028E 0287 A
573 028F 0290 A    ZEQU:   .WORD   .+1
574 0290 5000 A          LI      0,0          ; RETURN ZERO
575 0291 F300 A          SKNE   0,0(SP)       ; IF DATA NONZERO
576 0292 5001 A          LI      0,1          ; OTHERWISE RETURN 1
577 0293 98F7 I          JMP      PUT
578 ;
579 0294 8230 A          HEAD    ORD,2,LONG,'0'/256
580 0295 BC20 A          .WORD   '<'+EVEN,ZEQU-3
    0296 028C A
581 0297 0298 A    ZLESS: .WORD   .+1
582 0298 5000 A          LI      0,0          ; RETURN ZERO
583 0299 9F00 A          SKG    0,0(SP)       ; IF DATA <= ZERO
584 029A 98F7 I          JMP      PUT
585 029B 5001 A          LI      0,1          ; OTHERWISE RETURN 1
586 029C 98F7 I          JMP      PUT
587 ;
588 ;*****
589 ;*                MATH, BINARY                *
590 ;*****
591 ;
592 029D 81AB A          HEAD    ORD,1,SHORT,'+' /256
593 029E 0294 A          .WORD   ZLESS-3
594 029F 02A0 A    PLUS:   .WORD   .+1
595 02A0 C300 A          LD      0,0(SP)       ; ADD BOTTOM TWO
596 02A1 E301 A          ADD    0,1(SP)       ; STACK VALUES
597 02A2 7B01 A    BIN:    AISZ   SP,1   ; REMOVE ONE ARG
598 02A3 98F7 I          JMP      PUT          ; REPL OTHER W/RESULT
599 ;
600 02A4 8244 A          HEAD    ORD,2,LONG,'D'/256
601 02A5 AB20 A          .WORD   '+'+EVEN,PLUS-2
    02A6 029D A
602 02A7 02A8 A    DPLUS: .WORD   .+1
603 02A8 C303 A          LD      0,3(SP)       ; AUGEND LOW-ORDER
604 02A9 E301 A          ADD    0,1(SP)       ; ADDEND LOW-ORDER
605 02AA D303 A          ST     0,3(SP)       ; SUM LOW-ORDER
606 02AB C302 A          LD      0,2(SP)       ; AUGEND HI-ORDER
607 02AC CB00 A          LD      X,0(SP)       ; ADDEND HI-ORDER
608 02AD 7480 A          RADC   X,0          ; ADD WITH CARRY
609 02AE D302 A          ST     0,2(SP)       ; SUM HI-ORDER
610 02AF 98FB I          JMP      POP2
611 ;
612 02B0 854D A          HEAD    ORD,5,LONG,'M'/256
613 02B1 494E A          .WORD   'IN','US'+ODD,DPLUS-3
    02B2 55D3 A
    02B3 02A4 A

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614 02B4 02B5 A  MINUS:  .WORD  .+1
615 02B5 C300 A      LD      0,(SP)      ; GET STACK VALUE
616 02B6 7001 A      CAI     0,1        ; AND FORM 2'S COMP
617 02B7 98F7 I      JMP     PUT
618
619 02B8 8644 A      ;      HEAD     ORD,6,LONG,'D'/256
620 02B9 4D49 A      .WORD  'MI','NU','S'+EVEN,MINUS-4
      02BA 4E55 A
      02BB D320 A
      02BC 02B0 A
621 02BD 02BE A  DMINUS: .WORD  .+1
622 02BE 3780 A      SFLG   CRY          ; CLEAR BORROW
623 02BF 5000 A      LI     0,0         ; SUBTRACT LO-ORDER
624 02C0 9301 A      SUBB   0,1(SP)     ; FROM 0
625 02C1 D301 A      ST     0,1(SP)
626 02C2 5000 A      LI     0,0         ; SUBTRACT HI-ORDER
627 02C3 9300 A      SUBB   0,0(SP)    ; FROM 0 WITH BORROW
628 02C4 98F7 I      JMP     PUT
629
630 ;
631 ;*****
632 ;*                STACK MANIPULATION                *
633 ;*****
634 ;
634 02C5 844F A      HEAD     ORD,4,LONG,'O'/256
635 02C6 5645 A      .WORD  'VE','R'+EVEN,DMINUS-5
      02C7 D220 A
      02C8 02B8 A
636 02C9 02CA A  OVER:  .WORD  .+1
637 02CA C301 A      LD      0,1(SP)   ; GET SECOND VALUE
638 02CB 98F9 I      JMP     PUSH      ; PUSH ON STACK
639
640 02CC 8444 A      ;      HEAD     ORD,4,LONG,'D'/256
641 02CD 524F A      .WORD  'RO','P'+EVEN,OVER-4
      02CE D020 A
      02CF 02C5 A
642 02D0 015D A  DROP:  .WORD  POP          ; VECTOR DIRECTLY
643
644 02D1 8453 A      ;      HEAD     ORD,4,LONG,'S'/256
645 02D2 5741 A      .WORD  'WA','P'+EVEN,DROP-4
      02D3 D020 A
      02D4 02CC A
646 02D5 02D6 A  SWAP:  .WORD  .+1
647 02D6 C301 A      LD      0,1(SP)   ; EXCHANGE TOP
648 02D7 CB00 A      LD      X,0(SP)   ; TWO STACK
649 02D8 DB01 A      ST     X,1(SP)   ; VALUES
650 02D9 98F7 I      JMP     PUT
651
652 02DA 8344 A      ;      HEAD     ORD,3,LONG,'D'/256
653 02DB 55D0 A      .WORD  'UP'+ODD,SWAP-4
      02DC 02D1 A
654 02DD 02DE A  DUP:   .WORD  .+1
655 02DE C300 A      LD      0,0(SP)   ; GET BOTTOM VALUE
656 02DF 98F9 I      JMP     PUSH      ; PUSH A COPY OF IT
657

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659          ;* MEMORY INCREMENT, COMPLEMENT, ADDRESS CONVERT *
660          ;*****
661          ;
662 02E0 822B A          HEAD      ORD,2,LONG,'+' /256
663 02E1 A120 A          .WORD    '!'+EVEN,DUP-3
        02E2 02DA A
664 02E3 02E4 A  PSTORE: .WORD    .+1
665 02E4 A300 A          LD        0,@(SP)          ; GET VALUE
666 02E5 E301 A          ADD       0,1(SP)          ; ADD INCREMENT
667 02E6 B300 A          ST        0,@(SP)          ; STORE AT ADDRESS
668 02E7 98FB I          JMP       POP2             ; REMOVE BOTH
669          ;
670          ; THE FOLLOWING WORD EXPECTS A BYTE PSEUDO-ADDRESS
671          ;
672 02E8 8654 A          HEAD      ORD,6,LONG,'T' /256
673 02E9 4F47 A          .WORD    'OG','GL','E'+EVEN,PSTORE-3
        02EA 474C A
        02EB C520 A
        02EC 02E0 A
674 02ED 02EE A  TOGGLE: .WORD    .+1
675 02EE CB01 A          LD        X,1(SP)          ; GET BYTE ADDRESS
676 02EF 3800 A          PFLG     LINK             ; CONVERT TO
677 02F0 2603 A          ROR      X,1,1            ; WORD ADDRESS
678 02F1 DB01 A          ST        X,1(SP)          ; SAVE FOR LATER
679 02F2 C200 A          LD        0,(X)           ; GET DATA WORD
680 02F3 CB00 A          LD        X,0(SP)          ; GET BIT PATTERN
681 02F4 4801 A          BOC      LINK, .+2         ; EVEN BYTE ADDRESS
682 02F5 2A10 A          SHL      X,8,0            ; MEANS LEFT BYTE
683 02F6 5880 A          RXOR     X,0              ; COMPL SELECTED BITS
684 02F7 B301 A          ST        0,@1(SP)        ; REPLACE DATA WORD
685 02F8 98FB I          JMP       POP2
686          ;
687          ; THE FOLLOWING WORD CONVERTS A 15-BIT WORD
688          ; ADDRESS TO A 16-BIT BYTE PSEUDO-ADDRESS.
689          ;
690 02F9 8442 A          HEAD     ORD,4,LONG,'B' /256
691 02FA 5954 A          .WORD    'YT','E'+EVEN,TOGGLE-5
        02FB C520 A
        02FC 02E8 A
692 02FD 02FE A  BYTE: .WORD     .+1
693 02FE C300 A          LD        0,0(SP)          ; GET WORD ADDRESS
694 02FF 6800 A          RADD     0,0              ; MULTIPLY BY 2
695 0300 98F7 I          JMP       PUT
696          ;
697          ; THE FOLLOWING WORD CONVERTS A 16-BIT BYTE
698          ; PSEUDO-ADDRESS TO A 15-BIT WORD ADDRESS.
699          ;
700 0301 8443 A          HEAD     ORD,4,LONG,'C' /256
701 0302 454C A          .WORD    'EL','L'+EVEN,BYTE-4
        0303 CC20 A
        0304 02F9 A

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702 0305 0306 A CELL: .WORD .+1
703 0306 C300 A LD 0,0(SP) ; GET BYTE ADDRESS
704 0307 2C02 A SHR 0,1,0 ; DIVIDE BY 2
705 0308 98F7 I JMP PUT

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706 ;
707 ;*****
708 ;* MEMORY FETCH AND STORE *
709 ;*****
710 ;
711 0309 81C0 A HEAD ORD,1,SHORT,'@'/256
712 030A 0301 A .WORD CELL-4
713 030B 030C A AT: .WORD .+1
714 030C A300 A LD 0,@0(SP) ; GET VALUE
715 030D 98F7 I JMP PUT
716 ;
717 ; THE FOLLOWING WORD EXPECTS A BYTE PSEUDO-ADDRESS
718 ;
719 030E 8243 A HEAD ORD,2,LONG,'C'/256
720 030F C020 A .WORD '@'+EVEN,AT-2
721 0311 0312 A CAT: .WORD .+1
722 0312 CB00 A LD X,0(SP) ; GET BYTE ADDRESS
723 0313 3800 A PFLG LINK ; CONVERT TO
724 0314 2603 A ROR X,1,1 ; WORD ADDRESS
725 0315 C200 A LD 0,(X) ; GET DATA WORD
726 0316 4801 A BOC LINK,+.2 ; LINK = 0 MEANS
727 0317 2C10 A SHR 0,8,0 ; LEFT BYTE
728 0318 A901 A AND 0,XFF ; CLEAR UNWANTED BYTE
729 0319 98F7 I JMP PUT
730 031A 00FF A XFF: .WORD 00FF
731 ;
732 031B 81A1 A HEAD ORD,1,SHORT,'!'/256
733 031C 030E A .WORD CAT-3
734 031D 031E A STORE: .WORD .+1
735 031E C301 A LD 0,1(SP) ; GET VALUE
736 031F B300 A ST 0,@0(SP) ; STORE AT ADDRESS
737 0320 98FB I JMP POP2 ; REMOVE BOTH
738 ;
739 ; THE FOLLOWING WORD EXPECTS A BYTE PSEUDO-ADDRESS
740 ;
741 0321 8243 A HEAD ORD,2,LONG,'C'/256
742 0322 A120 A .WORD '!'+EVEN,STORE-2
743 0324 0325 A CSTORE: .WORD .+1
744 0325 6100 A PUSH IP ; SAVE IP
745 0326 CB00 A LD X,0(SP) ; GET BYTE ADDRESS
746 0327 3800 A PFLG LINK ; CONVERT TO
747 0328 2603 A ROR X,1,1 ; WORD ADDRESS
748 0329 C10B A LD 0,X00FF
749 032A C701 A LD 1,1(SP) ; BYTE TO BE
750 032B 5500 A RAND 0,1 ; STORED
751 032C 7000 A CAI 0,0 ; SET UP MASK

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```

752 032D 4802 A      BOC      LINK, .+3      ; AND CLEAR
753 032E 7000 A      CAI      0,0          ; APPROPRIATE
754 032F 2910 A      SHL      1,8,0     ; HALF OF WORD
755 0330 AA00 A      AND      0,(X)    ; TO STORE INTO
756 0331 6840 A      RADD     1,0      ; ADD IN BYTE
757 0332 D200 A      ST       0,(X)   ; STORE ALTERED WORD
758 0333 6500 A      PULL    IP       ; RESTORE IP

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759 0334 98FB I      JMP      POP2          ; REMOVE ARGUMENTS
760 0335 00FF A      X00FF:  .WORD      00FF
761                                     ;
762                                     ;*****
763                                     ;*                               ;*
764                                     ;*****
765                                     ;
766 0336 C1BA A      HEAD     IMM,1,SHORT,','/256
767 0337 0321 A      .WORD    CSTORE-3
768 0338 0342 A      COLON:  .WORD      DOCOL,QEXEC,SCSP,CURR,AT,CONT
      0339 04EF A
      033A 04CC A
      033B 0401 A
      033C 030B A
      033D 03FA A
769 033E 031D A      .WORD    STORE,CREATE,RBRAC,PSCODE
      033F 0779 A
      0340 0533 A
      0341 055E A
770                                     ;
771 0342 AC21 A      DOCOL:  DSZ      RP          ; EXTEND RETURN STK
772 0343 5C40 A      RCPY    IP,0        ; SAVE IP ON
773 0344 B021 A      ST      0,@RP      ; RETURN STACK
774 0345 5101 A      LI     IP,1        ; POINT IP TO WORD
775 0346 6980 A      RADD   W,IP       ; AFTER DOCOL
776 0347 98F8 I      JMP     NEXT
777                                     ;
778 0348 C1BB A      HEAD     IMM,1,SHORT,','/256
779 0349 0336 A      .WORD    COLON-2
780 034A 0342 A      SEMI:   .WORD      DOCOL,QCSP,COMPIL,SEMIS
      034B 0505 A
      034C 0521 A
      034D 026A A
781 034E 053E A      .WORD    SMUDGE,LBRAC,SEMIS
      034F 052C A
      0350 026A A

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```

782 ;
783 ;*****
784 ;*          CONSTANT, VARIABLE, USER          *
785 ;*****
786 ;
787 0351 8843 A          HEAD      ORD,8,LONG,'C'/256
788 0352 4F4E A          .WORD     'ON','ST','AN','T'+EVEN,SEMI-2
      0353 5354 A
      0354 414E A
      0355 D420 A
      0356 0348 A
789 0357 0342 A  CON:      .WORD     DOCOL,CREATE,SMUDGE,COMMA,PSCODE
      0358 0779 A
      0359 053E A
      035A 0448 A
      035B 055E A
790 ;
791 035C C201 A  DOCON:   LD          0,1(W)          ; GET PARAMETER
792 035D 98F9 I          JMP         PUSH          ; PUSH ON STACK

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793 ;
794 035E 8856 A          HEAD      ORD,8,LONG,'V'/256
795 035F 4152 A          .WORD     'AR','IA','BL','E'+EVEN,CON-6
      0360 4941 A
      0361 424C A
      0362 C520 A
      0363 0351 A
796 0364 0342 A  VAR:      .WORD     DOCOL,CON,PSCODE
      0365 0357 A
      0366 055E A
797 ;
798 0367 5001 A  DOVAR:   LI          0,1          ; FORM ADDRESS
799 0368 6880 A          RADD       W,0          ; OF PARAMETER
800 0369 98F9 I          JMP         PUSH          ; PUSH ON STACK
801 ;
802 036A 8455 A          HEAD      ORD,4,LONG,'U'/256
803 036B 5345 A          .WORD     'SE','R'+EVEN,VAR-6
      036C D220 A
      036D 035E A
804 036E 0342 A  USER:      .WORD     DOCOL,CON,PSCODE
      036F 0357 A
      0370 055E A
805 ;
806 0371 C201 A  DOUSER:  LD          0,1(W)          ; GET OFFSET
807 0372 E022 A          ADD         0,UP          ; ADD USER POINTER
808 0373 98F9 I          JMP         PUSH          ; PUSH ON STACK

```

```

809      ;
810      ;*****
811      ;*                DEFINED CONSTANTS                *
812      ;*****
813      ;
814 0374 81B0 A      HEAD      ORD,1,SHORT,'0'/256
815 0375 036A A      .WORD     USER-4
816 0376 035C A  ZERO:  .WORD     DOCON,0
      0377 0000 A
817      ;
818 0378 81B1 A      HEAD      ORD,1,SHORT,'1'/256
819 0379 0374 A      .WORD     ZERO-2
820 037A 035C A  ONE:   .WORD     DOCON,1
      037B 0001 A
821      ;
822 037C 81B2 A      HEAD      ORD,1,SHORT,'2'/256
823 037D 0378 A      .WORD     ONE-2
824 037E 035C A  TWO:   .WORD     DOCON,2
      037F 0002 A
825      ;
826 0380 81B3 A      HEAD      ORD,1,SHORT,'3'/256
827 0381 037C A      .WORD     TWO-2
828 0382 035C A  THREE: .WORD     DOCON,3
      0383 0003 A
829      ;
830 0384 8242 A      HEAD      ORD,2,LONG,'B'/256
831 0385 CC20 A      .WORD     'L'+EVEN,THREE-2
      0386 0380 A
832 0387 035C A  BL:    .WORD     DOCON,' '/256

```

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```

      0388 0020 A
833      ;
834 0389 8546 A      HEAD      ORD,5,LONG,'F'/256
835 038A 4952 A      .WORD     'IR','ST'+ODD,BL-3
      038B 53D4 A
      038C 0384 A
836 038D 035C A  FIRST: .WORD     DOCON,BUFFS
      038E 1DF0 A
837      ;
838 038F 854C A      HEAD      ORD,5,LONG,'L'/256
839 0390 494D A      .WORD     'IM','IT'+ODD,FIRST-4
      0391 49D4 A
      0392 0389 A
840 0393 035C A  LIMIT: .WORD     DOCON,TOPMEM
      0394 2000 A
841      ;
842 0395 8542 A      HEAD      ORD,5,LONG,'B'/256
843 0396 2F42 A      .WORD     '/B','UF'+ODD,LIMIT-4
      0397 55C6 A
      0398 038F A
844 0399 035C A  BBUF:  .WORD     DOCON,BLKSIZ
      039A 0080 A
845      ;

```

```

846 039B 8542 A          HEAD    ORD,5,LONG,'B'/256
847 039C 2F53 A          .WORD   '/S','CR'+ODD,BBUF-4
      039D 43D2 A
      039E 0395 A
848 039F 035C A    BSCR:   .WORD   DOCON,1024/BLKSIZ
      03A0 0008 A
849                               ;
850                               ;
851                               ;
852                               ;
853 03A1 872B A          HEAD    ORD,7,LONG,'+' /256
854 03A2 4F52 A          .WORD   'OR','IG','IN'+ODD,BSCR-4
      03A3 4947 A
      03A4 49CE A
      03A5 039B A
855 03A6 0342 A    PORIG:  .WORD   DOCOL,LIT,ORIG,PLUS,SEMIS
      03A7 0103 A
      03A8 0010 A
      03A9 029F A
      03AA 026A A
856                               ;
857                               ;*****
858                               ;*
859                               ;*****
860                               ;
861 03AB 8253 A          HEAD    ORD,2,LONG,'S'/256
862 03AC B020 A          .WORD   'O'+EVEN,PORIG-5
      03AD 03A1 A
863 03AE 0371 A    SZERO:  .WORD   DOUSER,03
      03AF 0003 A
864                               ;
865 03B0 8252 A          HEAD    ORD,2,LONG,'R'/256

```

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```

866 03B1 B020 A          .WORD   'O'+EVEN,SZERO-3
      03B2 03AB A
867 03B3 0371 A    RZERO:  .WORD   DOUSER,04
      03B4 0004 A
868                               ;
869 03B5 8354 A          HEAD    ORD,3,LONG,'T'/256
870 03B6 49C2 A          .WORD   'IB'+ODD,RZERO-3
      03B7 03B0 A
871 03B8 0371 A    TIB:    .WORD   DOUSER,05
      03B9 0005 A
872                               ;
873 03BA 8557 A          HEAD    ORD,5,LONG,'W'/256
874
875 03BB 4944 A          .WORD   'ID','TH'+ODD,TIB-3
      03BC 54C8 A
      03BD 03B5 A
876 03BE 0371 A    WIDTH:  .WORD   DOUSER,06
      03BF 0006 A
877                               ;

```

878	03C0	8757	A		HEAD	ORD,7,LONG,'W'/256
879	03C1	4152	A		.WORD	'AR','NI','NG'+ODD,WIDTH-4
	03C2	4E49	A			
	03C3	4EC7	A			
	03C4	03BA	A			
880	03C5	0371	A	WARN:	.WORD	DOUSER,07
	03C6	0007	A			
881						
882	03C7	8546	A		HEAD	ORD,5,LONG,'F'/256
883	03C8	454E	A		.WORD	'EN','CE'+ODD,WARN-5
	03C9	43C5	A			
	03CA	03C0	A			
884	03CB	0371	A	FENCE:	.WORD	DOUSER,08
	03CC	0008	A			
885						
886	03CD	8244	A		HEAD	ORD,2,LONG,'D'/256
887	03CE	D020	A		.WORD	'P'+EVEN,FENCE-4
	03CF	03C7	A			
888	03D0	0371	A	DP:	.WORD	DOUSER,09
	03D1	0009	A			
889						
890	03D2	8856	A		HEAD	ORD,8,LONG,'V'/256
891	03D3	4F43	A		.WORD	'OC','L','IN','K'+EVEN,DP-3
	03D4	2D4C	A			
	03D5	494E	A			
	03D6	CB20	A			
	03D7	03CD	A			
892	03D8	0371	A	VOCL:	.WORD	DOUSER,0A
	03D9	000A	A			
893						
894	03DA	8342	A		HEAD	ORD,3,LONG,'B'/256
895	03DB	4CCB	A		.WORD	'LK'+ODD,VOCL-6
	03DC	03D2	A			
896	03DD	0371	A	BLK:	.WORD	DOUSER,0B
	03DE	000B	A			
897						

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898	03DF	8249	A		HEAD	ORD,2,LONG,'I'/256
899	03E0	CE20	A		.WORD	'N'+EVEN,BLK-3
	03E1	03DA	A			
900	03E2	0371	A	IN:	.WORD	DOUSER,0C
	03E3	000C	A			
901						
902	03E4	834F	A		HEAD	ORD,3,LONG,'O'/256
903	03E5	55D4	A		.WORD	'UT'+ODD,IN-3
	03E6	03DF	A			
904	03E7	0371	A	OUT:	.WORD	DOUSER,0D
	03E8	000D	A			
905						
906	03E9	8353	A		HEAD	ORD,3,LONG,'S'/256
907	03EA	43D2	A		.WORD	'CR'+ODD,OUT-3
	03EB	03E4	A			
908	03EC	0371	A	SCR:	.WORD	DOUSER,0E
	03ED	000E	A			

```

909
910 03EE 864F A ; HEAD ORD,6,LONG,'O'/256
911 03EF 4646 A .WORD 'FF','SE','T'+EVEN,SCR-3
    03F0 5345 A
    03F1 D420 A
    03F2 03E9 A
912 03F3 0371 A OFFSET: .WORD DOUSER,OF
    03F4 000F A
913
914 03F5 8743 A ; HEAD ORD,7,LONG,'C'/256
915 03F6 4F4E A .WORD 'ON','TE','XT'+ODD,OFFSET-5
    03F7 5445 A
    03F8 58D4 A
    03F9 03EE A
916 03FA 0371 A CONT: .WORD DOUSER,010
    03FB 0010 A
917
918 03FC 8743 A ; HEAD ORD,7,LONG,'C'/256
919 03FD 5552 A .WORD 'UR','RE','NT'+ODD,CONT-5
    03FE 5245 A
    03FF 4ED4 A
    0400 03F5 A
920 0401 0371 A CURR: .WORD DOUSER,011
    0402 0011 A
921
922 0403 8553 A ; HEAD ORD,5,LONG,'S'/256
923 0404 5441 A .WORD 'TA','TE'+ODD,CURR-5
    0405 54C5 A
    0406 03FC A
924 0407 0371 A STATE: .WORD DOUSER,012
    0408 0012 A
925
926 0409 8442 A ; HEAD ORD,4,LONG,'B'/256
927 040A 4153 A .WORD 'AS','E'+EVEN,STATE-4
    040B C520 A
    040C 0403 A
928 040D 0371 A BASE: .WORD DOUSER,013
    040E 0013 A

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```

929
930 040F 8344 A ; HEAD ORD,3,LONG,'D'/256
931 0410 50CC A .WORD 'PL'+ODD,BASE-4
    0411 0409 A
932 0412 0371 A DPL: .WORD DOUSER,014
    0413 0014 A
933
934 0414 8346 A ; HEAD ORD,3,LONG,'F'/256
935 0415 4CC4 A .WORD 'LD'+ODD,DPL-3
    0416 040F A
936 0417 0371 A FLD: .WORD DOUSER,015
    0418 0015 A
937

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```

938 0419 8343 A      HEAD      ORD,3,LONG,'C'/256
939 041A 53D0 A      .WORD      'SP'+ODD,FLD-3
      041B 0414 A
940 041C 0371 A      CSP:      .WORD      DOUSER,016
      041D 0016 A
941                                     ;
942 041E 8252 A      HEAD      ORD,2,LONG,'R'/256
943 041F A320 A      .WORD      ','+EVEN,CSP-3
      0420 0419 A
944 0421 0371 A      RNUM:     .WORD      DOUSER,017
      0422 0017 A
945                                     ;
946 0423 8348 A      HEAD      ORD,3,LONG,'H'/256
947 0424 4CC4 A      .WORD      'LD'+ODD,RNUM-3
      0425 041E A
948 0426 0371 A      HLD:      .WORD      DOUSER,018
      0427 0018 A
949                                     ;
950                                     ;*****
951                                     ;*                MISCELLANEOUS                *
952                                     ;*****
953                                     ;
954 0428 8231 A      HEAD      ORD,2,LONG,'1'/256
955 0429 AB20 A      .WORD      '+'+EVEN,HLD-3
      042A 0423 A
956 042B 042C A      ONEP:     .WORD      .+1
957 042C 8F00 A      ISZ      0(SP)          ; ADD ONE
958 042D 98F8 I      JMP      NEXT          ; TO BOTTOM
959 042E 98F8 I      JMP      NEXT          ; OF STACK
960                                     ;
961 042F 8232 A      HEAD      ORD,2,LONG,'2'/256
962 0430 AB20 A      .WORD      '+'+EVEN,ONEP-3
      0431 0428 A
963 0432 0342 A      TWOP:     .WORD      DOCOL,TWO,PLUS,SEMIS
      0433 037E A
      0434 029F A
      0435 026A A
964                                     ;
965 0436 8448 A      HEAD      ORD,4,LONG,'H'/256
966 0437 4552 A      .WORD      'ER','E'+EVEN,TWOP-3
      0438 C520 A
      0439 042F A

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```

967 043A 0342 A      HERE:     .WORD      DOCOL,DP,AT,SEMIS
      043B 03D0 A
      043C 030B A
      043D 026A A
968                                     ;
969 043E 8541 A      HEAD      ORD,5,LONG,'A'/256
970 043F 4C4C A      .WORD      'LL','OT'+ODD,HERE-4
      0440 4FD4 A
      0441 0436 A

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```

971 0442 0342 A ALLOT: .WORD DOCOL,DP,PSTORE,SEMIS
    0443 03D0 A
    0444 02E3 A
    0445 026A A
972 ;
973 ; : , HERE ! 1 ALLOT ;
974 ;
975 0446 81AC A HEAD ORD,1,SHORT,' '/256
976 0447 043E A .WORD ALLOT-4
977 0448 0342 A COMMA: .WORD DOCOL,HERE,STORE,ONE,ALLOT,SEMIS
    0449 043A A
    044A 031D A
    044B 037A A
    044C 0442 A
    044D 026A A
978 ;
979 044E 81AD A HEAD ORD,1,SHORT,'-' /256
980 044F 0446 A .WORD COMMA-2
981 0450 0451 A SUB: .WORD .+1
982 0451 C301 A LD 0,1(SP) ; GET MINUEND
983 0452 3780 A SFLG CRY ; CLEAR BORROW
984 0453 9300 A SUBB 0,0(SP) ; SUBTRACT SUBTRAHEND
985 0454 98F6 I JMP BIN
986 ;
987 0455 81BD A HEAD ORD,1,SHORT,'=' /256
988 0456 044E A .WORD SUB-2
989 0457 0342 A EQUAL: .WORD DOCOL,SUB,ZEQU,SEMIS
    0458 0450 A
    0459 028F A
    045A 026A A
990 ;
991 045B 81BC A HEAD ORD,1,SHORT,'<' /256
992 045C 0455 A .WORD EQUAL-2
993 045D 0342 A LESS: .WORD DOCOL,SUB,ZLESS,SEMIS
    045E 0450 A
    045F 0297 A
    0460 026A A
994 ;
995 0461 81BE A HEAD ORD,1,SHORT,'>' /256
996 0462 045B A .WORD LESS-2
997 0463 0342 A GREAT: .WORD DOCOL,SWAP,LESS,SEMIS
    0464 02D5 A
    0465 045D A
    0466 026A A
998 ;
999 0467 8352 A HEAD ORD,3,LONG,'R' /256

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```

1000 0468 4FD4 A .WORD 'OT'+ODD,GREAT-2
    0469 0461 A
1001 046A 046B A ROT: .WORD .+1
1002 046B C302 A LD 0,2(SP) ; GET THIRD
1003 046C CB01 A LD X,1(SP) ; MOVE SECOND

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```

1004 046D DB02 A      ST      X,2(SP)          ; TO THIRD
1005 046E CB00 A      LD      X,0(SP)          ; MOVE BOTTOM
1006 046F DB01 A      ST      X,1(SP)          ; TO SECOND
1007 0470 98F7 I      JMP     PUT              ; PUT THIRD ON BOTTOM
1008
1009 0471 8553 A      ;
1009 0471 8553 A      HEAD     ORD,5,LONG,'S'/256
1010 0472 5041 A      .WORD   'PA','CE'+ODD,ROT-3
1010 0473 43C5 A
1010 0474 0467 A
1011 0475 0342 A      SPACE: .WORD   DOCOL,BL,EMIT,SEMIS
1011 0476 0387 A
1011 0477 01ED A
1011 0478 026A A
1012
1012 ;
1013 0479 842D A      HEAD     ORD,4,LONG,'-' /256
1014 047A 4455 A      .WORD   'DU','P'+EVEN,SPACE-4
1014 047B D020 A
1014 047C 0471 A
1015 047D 047E A      DDUP:  .WORD   .+1
1016 047E C300 A      LD      0,0(SP)          ; GET BOTTOM OF STACK
1017 047F 4101 A      BOC     Z,+.2
1018 0480 98F9 I      JMP     PUSH            ; DUP IF NOT ZERO
1019 0481 98F8 I      JMP     NEXT
1020
1020 ;
1021 ;*****
1021 ;*
1022 ;*          VARIABLE LENGTH NAME SUPPORT          *
1022 ;*****
1023 ;
1024 ;
1025 0482 8854 A      HEAD     ORD,8,LONG,'T'/256
1026 0483 5241 A      .WORD   'RA','VE','RS','E'+EVEN,DDUP-4
1026 0484 5645 A
1026 0485 5253 A
1026 0486 C520 A
1026 0487 0479 A
1027 0488 0342 A      TRAV:  .WORD   DOCOL,SWAP
1027 0489 02D5 A
1028 048A 02C9 A      TRAV1: .WORD   OVER,PLUS,LIT,007F
1028 048B 029F A
1028 048C 0103 A
1028 048D 007F A
1029 048E 02C9 A      .WORD   OVER,CAT,LESS,ZBRAN
1029 048F 0311 A
1029 0490 045D A
1029 0491 0124 A
1030 0492 FFF8 A      .WORD   TRAV1-.,SWAP,DROP,SEMIS
1030 0493 02D5 A
1030 0494 02D0 A
1030 0495 026A A
1031
1031 ;
1032 0496 864C A      HEAD     ORD,6,LONG,'L'/256

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```

1033 0497 4154 A      .WORD      'AT','ES','T'+EVEN,TRAV-6
      0498 4553 A
      0499 D420 A
      049A 0482 A
1034 049B 0342 A  LATEST: .WORD      DOCOL,CURR,AT,AT,SEMIS
      049C 0401 A
      049D 030B A
      049E 030B A
      049F 026A A
1035                ;
1036                ; : LFA      2  -  ;
1037                ;
1038 04A0 834C A      HEAD      ORD,3,LONG,'L'/256
1039 04A1 46C1 A      .WORD      'FA'+ODD,LATEST-5
      04A2 0496 A
1040 04A3 0342 A  LFA:      .WORD      DOCOL,TWO,SUB,SEMIS
      04A4 037E A
      04A5 0450 A
      04A6 026A A
1041                ;
1042                ; : CFA      1  -  ;
1043                ;
1044 04A7 8343 A      HEAD      ORD,3,LONG,'C'/256
1045 04A8 46C1 A      .WORD      'FA'+ODD,LFA-3
      04A9 04A0 A
1046 04AA 0342 A  CFA:      .WORD      DOCOL,ONE,SUB,SEMIS
      04AB 037A A
      04AC 0450 A
      04AD 026A A
1047                ;
1048                ; : NFA      2  -  BYTE  -1  TRAVERSE
1049                ; :                               -1  TRAVERSE  CELL  ;
1050                ;
1051 04AE 834E A      HEAD      ORD,3,LONG,'N'/256
1052 04AF 46C1 A      .WORD      'FA'+ODD,CFA-3
      04B0 04A7 A
1053 04B1 0342 A  NFA:      .WORD      DOCOL,TWO,SUB,BYTE,LIT,-1
      04B2 037E A
      04B3 0450 A
      04B4 02FD A
      04B5 0103 A
      04B6 FFFF A
1054 04B7 0488 A      .WORD      TRAV,LIT,-1,TRAV,CELL,SEMIS
      04B8 0103 A
      04B9 FFFF A
      04BA 0488 A
      04BB 0305 A
      04BC 026A A
1055                ;
1056                ; : PFA      BYTE  1  TRAVERSE  CELL  3  +  ;
1057                ;
1058 04BD 8350 A      HEAD      ORD,3,LONG,'P'/256
1059 04BE 46C1 A      .WORD      'FA'+ODD,NFA-3
      04BF 04AE A
1060 04C0 0342 A  PFA:      .WORD      DOCOL,BYTE,ONE,TRAV

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```

    04C1 02FD A
    04C2 037A A
    04C3 0488 A
1061 04C4 0305 A      .WORD    CELL,THREE,PLUS,SEMIS
    04C5 0382 A
    04C6 029F A
    04C7 026A A

1062                ;
1063                ;*****
1064                ;*          ERROR PROCEDURES, PER SHIRA          *
1065                ;*****
1066                ;
1067 04C8 8421 A      HEAD     ORD,4,LONG,'!'/256
1068 04C9 4353 A      .WORD    'CS','P'+EVEN,PFA-3
    04CA D020 A
    04CB 04BD A
1069 04CC 0342 A      SCSP:    .WORD    DOCOL,SPAT,CSP,STORE,SEMIS
    04CD 0255 A
    04CE 041C A
    04CF 031D A
    04D0 026A A

1070                ;
1071 04D1 863F A      HEAD     ORD,6,LONG,'?'/256
1072 04D2 4552 A      .WORD    'ER','RO','R'+EVEN,SCSP-4
    04D3 524F A
    04D4 D220 A
    04D5 04C8 A
1073 04D6 0342 A      QERROR: .WORD    DOCOL,SWAP,ZBRAN
    04D7 02D5 A
    04D8 0124 A
1074 04D9 0004 A      .WORD    QERR1-.,ERROR,BRAN
    04DA 0744 A
    04DB 011B A
1075 04DC 0002 A      .WORD    QERR2-.
1076 04DD 02D0 A      QERR1:  .WORD    DROP
1077 04DE 026A A      QERR2:  .WORD    SEMIS
1078                ;
1079 04DF 853F A      HEAD     ORD,5,LONG,'?'/256
1080 04E0 434F A      .WORD    'CO','MP'+ODD,QERROR-5
    04E1 4DD0 A
    04E2 04D1 A
1081 04E3 0342 A      QCOMP:  .WORD    DOCOL,STATE,AT,ZEQU
    04E4 0407 A
    04E5 030B A
    04E6 028F A
1082 04E7 0103 A      .WORD    LIT,0011,QERROR,SEMIS
    04E8 0011 A
    04E9 04D6 A
    04EA 026A A

1083                ;
1084 04EB 853F A      HEAD     ORD,5,LONG,'?'/256
1085 04EC 4558 A      .WORD    'EX','EC'+ODD,QCOMP-4
    04ED 45C3 A
    04EE 04DF A
1086 04EF 0342 A      QEXEC:  .WORD    DOCOL,STATE,AT

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    04F0 0407 A
    04F1 030B A
1087 04F2 0103 A      .WORD    LIT,0012,QERROR,SEMIS
    04F3 0012 A
    04F4 04D6 A
    04F5 026A A
1088
1089 04F6 863F A      ;
    HEAD    ORD,6,LONG,'?'/256
1090 04F7 5041 A      .WORD    'PA','IR','S'+EVEN,QEXEC-4
    04F8 4952 A
    04F9 D320 A
    04FA 04EB A
1091 04FB 0342 A      QPAIRS: .WORD    DOCOL,SUB,LIT,0013,QERROR,SEMIS
    04FC 0450 A
    04FD 0103 A
    04FE 0013 A
    04FF 04D6 A
    0500 026A A
1092
1093 0501 843F A      ;
    HEAD    ORD,4,LONG,'?'/256
1094 0502 4353 A      .WORD    'CS','P'+EVEN,QPAIRS-5
    0503 D020 A
    0504 04F6 A
1095 0505 0342 A      QCSP:   .WORD    DOCOL,SPAT,CSP,AT,SUB
    0506 0255 A
    0507 041C A
    0508 030B A
    0509 0450 A
1096 050A 0103 A      .WORD    LIT,0014,QERROR,SEMIS
    050B 0014 A
    050C 04D6 A
    050D 026A A
1097
1098 050E 883F A      ;
    HEAD    ORD,8,LONG,'?'/256
1099 050F 4C4F A      .WORD    'LO','AD','IN','G'+EVEN,QCSP-4
    0510 4144 A
    0511 494E A
    0512 C720 A
    0513 0501 A
1100 0514 0342 A      QLOAD: .WORD    DOCOL,BLK,AT,ZEQU
    0515 03DD A
    0516 030B A
    0517 028F A
1101 0518 0103 A      .WORD    LIT,0016,QERROR,SEMIS
    0519 0016 A
    051A 04D6 A
    051B 026A A
1102
1103
1104
1105
1106
1107
1108
1109 051C 8743 A      ;
    HEAD    ORD,7,LONG,'C'/256
;*****
;*          COMPILER, SMUDGE, HEX, DECIMAL          *
;*****
;
;          : COMPILER ?COMP R> DUP 1+ >R @ , ;
;

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1110	051D	4F4D	A		.WORD	'OM', 'PI', 'LE'+ODD, QLOAD-6
	051E	5049	A			
	051F	4CC5	A			
	0520	050E	A			
1111	0521	0342	A	COMPIL:	.WORD	DOCOL, QCOMP, FROMR, DUP
	0522	04E3	A			
	0523	0283	A			
	0524	02DD	A			
1112	0525	042B	A		.WORD	ONEP, TOR, AT, COMMA, SEMIS
	0526	027B	A			
	0527	030B	A			
	0528	0448	A			
	0529	026A	A			
1113						
				;		
1114	052A	C1DB	A		HEAD	IMM, 1, SHORT, '['/256
1115	052B	051C	A		.WORD	COMPIL-5
1116	052C	0342	A	LBRAC:	.WORD	DOCOL, ZERO, STATE, STORE, SEMIS
	052D	0376	A			
	052E	0407	A			
	052F	031D	A			
	0530	026A	A			
1117						
				;		
1118	0531	81DD	A		HEAD	ORD, 1, SHORT, ']' /256
1119	0532	052A	A		.WORD	LBRAC-2
1120	0533	0342	A	RBRAC:	.WORD	DOCOL, LIT, 00C0
	0534	0103	A			
	0535	00C0	A			
1121	0536	0407	A		.WORD	STATE, STORE, SEMIS
	0537	031D	A			
	0538	026A	A			
1122						
				;		
1123				;	: SMUDGE	LATEST BYTE 20 TOGGLE ;
1124				;		
1125	0539	8653	A		HEAD	ORD, 6, LONG, 'S' /256
1126	053A	4D55	A		.WORD	'MU', 'DG', 'E'+EVEN, RBRAC-2
	053B	4447	A			
	053C	C520	A			
	053D	0531	A			
1127	053E	0342	A	SMUDGE:	.WORD	DOCOL, LATEST, BYTE
	053F	049B	A			
	0540	02FD	A			
1128	0541	0103	A		.WORD	LIT, 0020, TOGGLE, SEMIS
	0542	0020	A			
	0543	02ED	A			
	0544	026A	A			
1129						
				;		
1130	0545	8348	A		HEAD	ORD, 3, LONG, 'H' /256
1131	0546	45D8	A		.WORD	'EX'+ODD, SMUDGE-5
	0547	0539	A			
1132	0548	0342	A	HEX:	.WORD	DOCOL, LIT, 0010, BASE, STORE, SEMIS
	0549	0103	A			
	054A	0010	A			
	054B	040D	A			
	054C	031D	A			
	054D	026A	A			

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1133      ;
1134 054E 8744 A      HEAD      ORD,7,LONG,'D'/256
1135 054F 4543 A      .WORD      'EC','IM','AL'+ODD,HEX-3
      0550 494D A
      0551 41CC A
      0552 0545 A
1136 0553 0342 A      DEC:      .WORD      DOCOL,LIT,0A,BASE,STORE,SEMIS
      0554 0103 A
      0555 000A A
      0556 040D A
      0557 031D A
      0558 026A A

1137      ;
1138      ;*****
1139      ;*                               ;CODE                               *
1140      ;*****
1141      ;
1142 0559 8728 A      HEAD      ORD,7,LONG,'('/256
1143 055A 3B43 A      .WORD      ';C','OD','E'+ODD,DEC-5
      055B 4F44 A
      055C 45A9 A
      055D 054E A
1144 055E 0342 A      PSCODE: .WORD      DOCOL,FROMR,LATEST
      055F 0283 A
      0560 049B A
1145 0561 04C0 A      .WORD      PFA,CFA,STORE,SEMIS
      0562 04AA A
      0563 031D A
      0564 026A A

1146      ;
1147      ;
1148 0565 C53B A      HEAD      IMM,5,LONG,';/256
1149 0566 434F A      .WORD      'CO','DE'+ODD,PSCODE-5
      0567 44C5 A
      0568 0559 A
1150 0569 0342 A      SEMIC:  .WORD      DOCOL,QCSP,COMPIL,PSCODE
      056A 0505 A
      056B 0521 A
      056C 055E A
1151 056D 052C A      .WORD      LBRAC,SMUDGE,SEMIS
      056E 053E A
      056F 026A A

1152      ;
1153      ;*****
1154      ;*                               <BUILDS, DOES>                               *
1155      ;*****
1156      ;
1157 0570 873C A      HEAD      ORD,7,LONG,'</256
1158 0571 4255 A      .WORD      'BU','IL','DS'+ODD,SEMIC-4
      0572 494C A
      0573 44D3 A
      0574 0565 A
1159 0575 0342 A      BUILDS: .WORD      DOCOL,ZERO,CON,SEMIS
      0576 0376 A
      0577 0357 A

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```

    0578 026A A
1160      ;
1161 0579 8544 A      HEAD      ORD,5,LONG,'D'/256
1162 057A 4F45 A      .WORD      'OE','S'+ODD,BUILDS-5
      057B 53BE A
      057C 0570 A
1163 057D 0342 A      DOES:    .WORD      DOCOL,FROMR,LATEST,PFA,STORE,PSCODE
      057E 0283 A
      057F 049B A
      0580 04C0 A
      0581 031D A
      0582 055E A

1164      ;
1165 0583 AC21 A      DODOES: DSZ      RP      ; EXTEND RETURN STACK
1166 0584 5C40 A      RCPY      IP,0
1167 0585 B021 A      ST      0,@RP      ; PUSH IP
1168 0586 C601 A      LD      1,1(W)      ; LOAD IP FROM PARAM
1169 0587 5002 A      LI      0,2      ; POINT BOTTOM
1170 0588 6880 A      RADD     W,0      ; OF STACK
1171 0589 98F9 I      JMP      PUSH      ; TO PFA+1
1172      ;
1173      ;*****
1174      ;*          TEXT OUTPUTS          *
1175      ;*****
1176      ;
1177      ; : COUNT      BYTE      DUP      1+      SWAP      C@      ;
1178      ;
1179 058A 8543 A      HEAD      ORD,5,LONG,'C'/256
1180 058B 4F55 A      .WORD      'OU','NT'+ODD,DOES-4
      058C 4ED4 A
      058D 0579 A
1181 058E 0342 A      COUNT:   .WORD      DOCOL,BYTE,DUP,ONEP,SWAP,CAT,SEMIS
      058F 02FD A
      0590 02DD A
      0591 042B A
      0592 02D5 A
      0593 0311 A
      0594 026A A

1182      ;
1183 0595 8454 A      HEAD      ORD,4,LONG,'T'/256
1184 0596 5950 A      .WORD      'YP','E'+EVEN,COUNT-4
      0597 C520 A
      0598 058A A
1185 0599 0342 A      TYPE:    .WORD      DOCOL,DDUP,ZBRAN
      059A 047D A
      059B 0124 A
1186 059C 000C A      .WORD      TYPE2-.,OVER,PLUS,SWAP,XDO
      059D 02C9 A
      059E 029F A
      059F 02D5 A
      05A0 0155 A
1187 05A1 0161 A      TYPE1:   .WORD      I,CAT,EMIT,XLOOP
      05A2 0311 A
      05A3 01ED A
      05A4 012F A

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```

1188 05A5 FFFC A          .WORD  TYPE1-.,BRAN
      05A6 011B A
1189 05A7 0002 A          .WORD  TYPE3-.
1190 05A8 02D0 A    TYPE2: .WORD  DROP
1191 05A9 026A A    TYPE3: .WORD  SEMIS
1192                ;
1193 05AA 892D A          HEAD   ORD,9,LONG,'-/256
1194 05AB 5452 A          .WORD  'TR','AI','LI','NG'+ODD,TYPE-4
      05AC 4149 A
      05AD 4C49 A
      05AE 4EC7 A
      05AF 0595 A
1195 05B0 0342 A    DTRAIL: .WORD  DOCOL,DUP,ZERO,XDO
      05B1 02DD A
      05B2 0376 A
      05B3 0155 A
1196 05B4 02C9 A    DTRAI:  .WORD  OVER,OVER,PLUS,ONE,SUB
      05B5 02C9 A
      05B6 029F A
      05B7 037A A
      05B8 0450 A
1197 05B9 0311 A          .WORD  CAT,BL,SUB,ZBRAN
      05BA 0387 A
      05BB 0450 A
      05BC 0124 A
1198 05BD 0004 A          .WORD  DTRA2-.,LEAVE,BRAN
      05BE 0273 A
      05BF 011B A
1199 05C0 0003 A          .WORD  DTRA3-.
1200 05C1 037A A    DTRA2:  .WORD  ONE,SUB
      05C2 0450 A
1201 05C3 012F A    DTRA3:  .WORD  XLOOP
1202 05C4 FFF0 A          .WORD  DTRAI-.,SEMIS
      05C5 026A A
1203                ;
1204                ;   : (." )   R   COUNT  DUP  CELL  1+
1205                ;           R>  +  >R  TYPE  ;
1206                ;
1207 05C6 8428 A          HEAD   ORD,4,LONG,'(/256
1208 05C7 2E22 A          .WORD  '."',')'+EVEN,DTRAIL-6
      05C8 A920 A
      05C9 05AA A
1209 05CA 0342 A    PDOTQ:  .WORD  DOCOL,R,COUNT,DUP,CELL,ONEP
      05CB 0289 A
      05CC 058E A
      05CD 02DD A
      05CE 0305 A
      05CF 042B A
1210 05D0 0283 A          .WORD  FROMR,PLUS,TOR,TYPE,SEMBF
      05D1: 029F A
      05D2 027B A
      05D3 0599 A
      05D4 026A A
1211:                ;
1212                ;   : ."   22  STATE  @  IF  COMPILE  (." )  WORD

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```

1213          ;          HERE BYTE C@ CELL 1+ ALLOT ELSE
1214          ;          WORD HERE COUNT TYPE ENDIF ;'
1215          ;          IMMEDIATE
1216          ;
1217 05D5 C22E A          HEAD IMM,2,LONG,'./256
1218 05D6 A220 A          .WORD "'"+EVEN,PDOTQ-4
      05D7 05C6 A
1219 05D8 0342 A DOTQ:  .WORD DOCOL,LIT,'"/256,STATE,AT,ZBRAN
      05D9 0103 A
      05DA 0022 A
      05DB 0407 A
      05DC 030B A
      05DD 0124 A
1220 05DE 000C A          .WORD DOTQ1-.,COMPIL,PDOTQ,WORD
      05DF 0521 A
      05E0 05CA A
      05E1 06A8 A
1221 05E2 043A A          .WORD HERE,BYTE,CAT,CELL,ONEP,ALLOT,BRAN
      05E3 02FD A
      05E4 0311 A
      05E5 0305 A
      05E6 042B A
      05E7 0442 A
      05E8 011B A
1222 05E9 0005 A          .WORD DOTQ2-.
1223 05EA 06A8 A DOTQ1: .WORD WORD,HERE,COUNT,TYPE
      05EB 043A A
      05EC 058E A
      05ED 0599 A
1224 05EE 026A A DOTQ2: .WORD SEMIS
1225          ;
1226          .LIST PART=2
      05ED 0599 A
1224 05EE 026A A DOTQ2: .WORD SEMIS
1225          ;
1226          024 05EE 026A A DOTQ2: .WORD SEMIS
1225          ;
1226          PACE ASSEMBLER REV-A 05/23/75
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1227 ;
1228 ;*****
1229 ;*                TERMINAL INPUT                *
1230 ;*****
1231 ;
1232 ;       : EXPECT   OVER  +  OVER  DO  KEY  DUP
1233 ;                   07  +ORIGIN @  =  IF  DROP  08
1234 ;                   OVER  I  =  DUP  R>  2  -  +  >R  -
1235 ;                   ELSE  DUP  OD  =
1236 ;                   IF  LEAVE  DROP  BL  0  ELSE  DUP
1237 ;                   ENDIF  I  C!  0  I  1+  C!
1238 ;                   ENDIF  EMIT  LOOP  DROP  ;
1239 ;
1240 05EF 8645 A           HEAD   ORD,6,LONG,'E'/256
1241 05F0 5850 A           .WORD  'XP','EC','T'+EVEN,DOTQ-3
      05F1 4543 A
      05F2 D420 A
      05F3 05D5 A
1242 05F4 0342 A   EXPECT: .WORD  DOCOL,OVER,PLUS,OVER,XDO
      05F5 02C9 A
      05F6 029F A
      05F7 02C9 A
      05F8 0155 A
1243 05F9 01F1 A   EXPEC1: .WORD  KEY,DUP,LIT,07,PORIG,AT,EQUAL,ZBRAN
      05FA 02DD A
      05FB 0103 A
      05FC 0007 A
      05FD 03A6 A
      05FE 030B A
      05FF 0457 A
      0600 0124 A
1244 0601 0010 A           .WORD  EXPEC2-.,DROP,LIT,08,OVER,I,EQUAL
      0602 02D0 A
      0603 0103 A
      0604 0008 A
      0605 02C9 A
      0606 0161 A
      0607 0457 A
1245 0608 02DD A           .WORD  DUP,FROMR,TWO,SUB,PLUS,TOR,SUB,BRAN
      0609 0283 A
      060A 037E A
      060B 0450 A
      060C 029F A
      060D 027B A
      060E 0450 A

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060F 011B A			
1246 0610 0014 A		.WORD	EXPEC5-
1247 0611 02DD A	EXPEC2:	.WORD	DUP,LIT,OD,EQUAL,ZBRAN
0612 0103 A			
0613 000D A			
0614 0457 A			
0615 0124 A			
1248 0616 0007 A		.WORD	EXPEC3-.,LEAVE,DROP,BL,ZERO,BRAN
0617 0273 A			
0618 02D0 A			
0619 0387 A			
061A 0376 A			
061B 011B A			
1249 061C 0002 A		.WORD	EXPEC4-
1250 061D 02DD A	EXPEC3:	.WORD	DUP
1251 061E 0161 A	EXPEC4:	.WORD	I,CSTORE,ZERO,I,ONEP,CSTORE
061F 0324 A			
0620 0376 A			
0621 0161 A			
0622 042B A			
0623 0324 A			
1252 0624 01ED A	EXPEC5:	.WORD	EMIT,XLOOP
0625 012F A			
1253 0626 FFD3 A		.WORD	EXPEC1-.,DROP,SEMIS
0627 02D0 A			
0628 026A A			
1254			
1255			
1256			
1257 0629 8551 A		HEAD	ORD,5,LONG,'Q'/256
1258 062A 5545 A		.WORD	'UE','RY'+ODD,EXPECT-5
062B 52D9 A			
062C 05EF A			
1259 062D 0342 A	QUERY:	.WORD	DOCOL,TIB,AT,BYTE,LIT,0050
062E 03B8 A			
062F 030B A			
0630 02FD A			
0631 0103 A			
0632 0050 A			
1260 0633 05F4 A		.WORD	EXPECT,ZERO,IN,STORE,SEMIS
0634 0376 A			
0635 03E2 A			
0636 031D A			
0637 026A A			
1261			
1262 0638 C180 A		HEAD	IMM,1,SHORT,00 ; NULL
1263 0639 0629 A		.WORD	QUERY-4
1264 063A 0342 A	NULL:	.WORD	DOCOL,BLK,AT,ZBRAN
063B 03DD A			
063C 030B A			
063D 0124 A			
1265 063E 0013 A		.WORD	NULL2-
1266 063F 037A A		.WORD	ONE,BLK,PSTORE,ZERO,IN,STORE
0640 03DD A			
0641 02E3 A			

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    0642 0376 A
    0643 03E2 A
    0644 031D A
1267 0645 03DD A      .WORD    BLK,AT,BSCR,MOD,ZEQU,ZBRAN
    0646 030B A
    0647 039F A
    0648 0919 A
    0649 028F A
    064A 0124 A
1268 064B 0004 A      .WORD    NULL1-. ,QEXEC, FROMR,DROP
    064C 04EF A
    064D 0283 A
    064E 02D0 A
1269 064F 011B A      NULL1:  .WORD    BRAN
1270 0650 0003 A      .WORD    NULL3-.
1271 0651 0283 A      NULL2:  .WORD    FROMR,DROP
    0652 02D0 A
1272 0653 026A A      NULL3:  .WORD    SEMIS
1273                ;
1274                ;*****
1275                ;*      FILL, ERASE, BLANKS, HOLD, PAD, CMOVE      *
1276                ;*****
1277                ;
1278                ;      NOTE THAT THE NEXT THREE WORDS FILL
1279                ;      16-BIT WORDS, NOT BYTES.
1280                ;
1281                ;      : FILL    SWAP  >R  OVER  !  DUP  1+
1282                ;      R>  1  -  MOVE  ;
1283                ;
1284 0654 8446 A      HEAD    ORD,4, LONG, 'F'/256
1285 0655 494C A      .WORD    'IL', 'L'+EVEN, NULL-2
    0656 CC20 A
    0657 0638 A
1286 0658 0342 A      FILL:   .WORD    DOCOL, SWAP, TOR, OVER, STORE, DUP
    0659 02D5 A
    065A 027B A
    065B 02C9 A
    065C 031D A
    065D 02DD A
1287 065E 042B A      .WORD    ONEP, FROMR, ONE, SUB, MOVE, SEMIS
    065F 0283 A
    0660 037A A
    0661 0450 A
    0662 0201 A
    0663 026A A
1288                ;
1289 0664 8545 A      HEAD    ORD,5, LONG, 'E'/256
1290 0665 5241 A      .WORD    'RA', 'SE'+ODD, FILL-4
    0666 53C5 A
    0667 0654 A
1291 0668 0342 A      ERASE:  .WORD    DOCOL, ZERO, FILL, SEMIS
    0669 0376 A
    066A 0658 A
    066B 026A A
1292                ;

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```

1293           ;      : BLANKS      2020  FILL  ;
1294           ;
1295 066C 8642 A           HEAD      ORD,6,LONG,'B'/256
1296 066D 4C41 A           .WORD     'LA','NK','S'+EVEN,ERASE-4
           066E 4E4B A
           066F D320 A
           0670 0664 A
1297 0671 0342 A  BLANKS: .WORD     DOCOL,LIT,02020,FILL,SEMIS
           0672 0103 A
           0673 2020 A
           0674 0658 A
           0675 026A A

1298           ;
1299 0676 8448 A           HEAD      ORD,4,LONG,'H'/256
1300 0677 4F4C A           .WORD     'OL','D'+EVEN,BLANKS-5
           0678 C420 A
           0679 066C A
1301 067A 0342 A  HOLD:   .WORD     DOCOL,LIT,-1,HLD,PSTORE
           067B 0103 A
           067C FFFF A
           067D 0426 A
           067E 02E3 A
1302 067F 0426 A           .WORD     HLD,AT,CSTORE,SEMIS
           0680 030B A
           0681 0324 A
           0682 026A A

1303           ;
1304           ;
1305           ;
1306           ;      : PAD      HERE  22  +  ;
1307           ;
1308 0683 8350 A           HEAD      ORD,3,LONG,'P'/256
1309 0684 41C4 A           .WORD     'AD'+ODD,HOLD-4
           0685 0676 A
1310 0686 0342 A  PAD:   .WORD     DOCOL,HERE,LIT,0022,PLUS,SEMIS
           0687 043A A
           0688 0103 A
           0689 0022 A
           068A 029F A
           068B 026A A

1311           ;
1312           ;      : CMOVE    -DUP  IF  OVER  +  SWAP  DO
1313           ;      DUP  C@  I  C!  1+  LOOP
1314           ;      ELSE  DROP  ENDIF  DROP  ;
1315           ;
1316 068C 8543 A           HEAD      ORD,5,LONG,'C'/256
1317 068D 4D4F A           .WORD     'MO','VE'+ODD,PAD-3
           068E 56C5 A
           068F 0683 A
1318 0690 0342 A  CMOVE: .WORD     DOCOL,DDUP,ZBRAN
           0691 047D A
           0692 0124 A
1319 0693 000E A           .WORD     CMOVE2-.,OVER,PLUS,SWAP,XDO
           0694 02C9 A
           0695 029F A

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```

    0696 02D5 A
    0697 0155 A
  1320 0698 02DD A   CMOVE1: .WORD   DUP,CAT,I,CSTORE,ONEP,XLOOP
    0699 0311 A
    069A 0161 A
    069B 0324 A
    069C 042B A
    069D 012F A
  1321 069E FFFA A           .WORD   CMOVE1-.,BRAN
    069F 011B A
  1322 06A0 0002 A           .WORD   CMOVE3-.
  1323 06A1 02D0 A   CMOVE2: .WORD   DROP
  1324 06A2 02D0 A   CMOVE3: .WORD   DROP,SEMIS
    06A3 026A A
  1325 ;
  1326 ;*****
  1327 ;*                               WORD                               *
  1328 ;*****
  1329 ;
  1330 ;   : WORD   BLK @ IF BLK @ BLOCK ELSE TIB @
  1331 ;           ENDIF BYTE IN @ + SWAP ENCLOSE
  1332 ;           HERE 11 BLANKS IN +! OVER - >R
  1333 ;           R HERE BYTE C! + HERE BYTE 1+
  1334 ;           R> CMOVE ;
  1335 ;
  1336 06A4 8457 A           HEAD   ORD,4,LONG,'W'/256
  1337 06A5 4F52 A           .WORD   'OR','D'+EVEN,CMOVE-4
    06A6 C420 A
    06A7 068C A
  1338 06A8 0342 A   WORD:   .WORD   DOCOL,BLK,AT,ZBRAN
    06A9 03DD A
    06AA 030B A
    06AB 0124 A
  1339 06AC 0006 A           .WORD   WORD1-.,BLK,AT,BLOCK,BRAN
    06AD 03DD A
    06AE 030B A
    06AF 09B6 A
    06B0 011B A
  1340 06B1 0003 A           .WORD   WORD2-.
  1341 06B2 03B8 A   WORD1:  .WORD   TIB,AT
    06B3 030B A
  1342 06B4 02FD A   WORD2:  .WORD   BYTE,IN,AT,PLUS,SWAP,ENCL
    06B5 03E2 A
    06B6 030B A
    06B7 029F A
    06B8 02D5 A
    06B9 01B1 A
  1343 06BA 043A A           .WORD   HERE,LIT,17,BLANKS,IN,PSTORE
    06BB 0103 A
    06BC 0011 A
    06BD 0671 A
    06BE 03E2 A
    06BF 02E3 A
  1344 06C0 02C9 A           .WORD   OVER,SUB,TOR,R,HERE,BYTE,CSTORE
    06C1 0450 A

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```

    06C2 027B A
    06C3 0289 A
    06C4 043A A
    06C5 02FD A
    06C6 0324 A
1345 06C7 029F A      .WORD    PLUS,HERE,BYTE,ONEP
    06C8 043A A
    06C9 02FD A
    06CA 042B A
1346 06CB 0283 A      .WORD    FROMR,CMOVE,SEMIS
    06CC 0690 A
    06CD 026A A
1347
1348 ;*****
1349 ;*          (NUMBER), NUMBER, -FIND          *
1350 ;*****
1351 ;
1352 06CE 8828 A      HEAD    ORD,8,LONG,'('/256
1353 06CF 4E55 A      .WORD    'NU','MB','ER','')+EVEN,WORD-4
    06D0 4D42 A
    06D1 4552 A
    06D2 A920 A
    06D3 06A4 A
1354 06D4 0342 A      PNUMB:  .WORD    DOCOL
1355 06D5 042B A      PNUMB1: .WORD    ONEP,DUP,TOR,CAT,BASE,AT,DIGIT,ZBRAN
    06D6 02DD A
    06D7 027B A
    06D8 0311 A
    06D9 040D A
    06DA 030B A
    06DB 0166 A
    06DC 0124 A
1356 06DD 0016 A      .WORD    PNUMB3-.,SWAP,BASE,AT,USTAR
    06DE 02D5 A
    06DF 040D A
    06E0 030B A
    06E1 0213 A
1357 06E2 02D0 A      .WORD    DROP,ROT,BASE,AT,USTAR
    06E3 046A A
    06E4 040D A
    06E5 030B A
    06E6 0213 A
1358 06E7 02A7 A      .WORD    DPLUS,DPL,AT,ONEP,ZBRAN
    06E8 0412 A
    06E9 030B A
    06EA 042B A
    06EB 0124 A
1359 06EC 0004 A      .WORD    PNUMB2-.,ONE,DPL,PSTORE
    06ED 037A A
    06EE 0412 A
    06EF 02E3 A
1360 06F0 0283 A      PNUMB2: .WORD    FROMR,BRAN
    06F1 011B A
1361 06F2 FFE3 A      .WORD    PNUMB1-.
1362 06F3 0283 A      PNUMB3: .WORD    FROMR,SEMIS

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```

    06F4 026A A
1363      ;
1364      ; : NUMBER   BYTE   0   0   ROT   DUP   1+   C@
1365      ;       2D   =   DUP   >R   +   -1
1366      ;       BEGIN  DPL   !   (NUMBER)  DUP   C@   BL   -
1367      ;       WHILE  DUP   C@   2E   -   0   ?ERROR   0   REPEAT
1368      ;       DROP   R>   IF   DMINUS   ENDIF   ;
1369      ;
1370 06F5 864E A      HEAD   ORD,6,LONG,'N'/256
1371 06F6 554D A      .WORD   'UM','BE','R'+EVEN,PNUMB-6
    06F7 4245 A
    06F8 D220 A
    06F9 06CE A
1372 06FA 0342 A      NUMB:   .WORD   DOCOL,BYTE,ZERO,ZERO
    06FB 02FD A
    06FC 0376 A
    06FD 0376 A
1373 06FE 046A A      .WORD   ROT,DUP,ONEP,CAT,LIT
    06FF 02DD A
    0700 042B A
    0701 0311 A
    0702 0103 A
1374 0703 002D A      .WORD   '-'/256,EQUAL,DUP,TOR,PLUS,LIT,-1
    0704 0457 A
    0705 02DD A
    0706 027B A
    0707 029F A
    0708 0103 A
    0709 FFFF A
1375 070A 0412 A      NUMB1:  .WORD   DPL,STORE,PNUMB,DUP,CAT,BL,SUB,ZBRAN
    070B 031D A
    070C 06D4 A
    070D 02DD A
    070E 0311 A
    070F 0387 A
    0710 0450 A
    0711 0124 A
1376 0712 000B A      .WORD   NUMB2-.,DUP,CAT,LIT,'.'/256
    0713 02DD A
    0714 0311 A
    0715 0103 A
    0716 002E A
1377 0717 0450 A      .WORD   SUB,ZERO,QERROR,ZERO,BRAN
    0718 0376 A
    0719 04D6 A
    071A 0376 A
    071B 011B A
1378 071C FFEE A      .WORD   NUMB1-.
1379 071D 02DD A      NUMB2:  .WORD   DROP,FROMR,ZBRAN
    071E 0283 A
    071F 0124 A
1380 0720 0002 A      .WORD   NUMB3-.,DMINUS
    0721 02BD A
1381 0722 026A A      NUMB3:  .WORD   SEMIS
1382      ;

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1383 0723 852D A      HEAD      ORD,5,LONG,'-/256
1384 0724 4649 A      .WORD      'FI','ND'+ODD,NUMB-5
      0725 4EC4 A
      0726 06F5 A
1385 0727 0342 A      DFIND:    .WORD      DOCOL,BL,WORD,HERE,CONT,AT
      0728 0387 A
      0729 06A8 A
      072A 043A A
      072B 03FA A
      072C 030B A
1386 072D 030B A      .WORD      AT,PFIND,DUP,ZEQU,ZBRAN
      072E 017D A
      072F 02DD A
      0730 028F A
      0731 0124 A
1387 0732 0005 A      .WORD      DFIND1-.,DROP,HERE,LATEST,PFIND
      0733 02D0 A
      0734 043A A
      0735 049B A
      0736 017D A
1388 0737 026A A      DFIND1:  .WORD      SEMIS
1389                                     ;
1390                                     ;*****
1391                                     ;*                ERROR HANDLER                *
1392                                     ;*****
1393                                     ;
1394                                     .FORM      STRING,8,8
1395                                     ;
1396 0738 8728 A      HEAD      ORD,7,LONG,'(/256
1397 0739 4142 A      .WORD      'AB','OR','E'+ODD,DFIND-4
      073A 4F52 A
      073B 54A9 A
      073C 0723 A
1398 073D 0342 A      PABORT:  .WORD      DOCOL,ABORT,SEMIS
      073E 0874 A
      073F 026A A
1399                                     ;
1400 0740 8545 A      HEAD      ORD,5,LONG,'E'/256
1401 0741 5252 A      .WORD      'RR','OR'+ODD,PABORT-5
      0742 4FD2 A
      0743 0738 A
1402 0744 0342 A      ERROR:   .WORD      DOCOL,WARN,AT,ZLESS,ZBRAN
      0745 03C5 A
      0746 030B A
      0747 0297 A
      0748 0124 A
1403 0749 0002 A      .WORD      ERROR1-.,PABORT
      074A 073D A
1404 074B 043A A      ERROR1:  .WORD      HERE,COUNT,TYPE,PDOTQ
      074C 058E A
      074D 0599 A
      074E 05CA A
1405 074F 0420 A      STRING   4,' '/256
1406 0750 203F A      .ASCII   ' ? '
      0751 2020 A

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```

1407 0752 0A05 A      .WORD  MESS,SPSTOR,IN,AT
      0753 025B A
      0754 03E2 A
      0755 030B A
1408 0756 03DD A      .WORD  BLK,AT,QUIT,SEMIS
      0757 030B A
      0758 085C A
      0759 026A A

1409                      ;
1410                      ; : ID.  PAD  010  5F5F  FILL  DUP  PFA  LFA
1411                      ;      OVER  -  PAD  SWAP  MOVE  PAD  COUNT
1412                      ;      01F  AND  TYPE  SPACE  ;
1413                      ;
1414 075A 8349 A      HEAD  ORD,3,LONG,'I'/256
1415 075B 44AE A      .WORD  'D.'+ODD,ERROR-4
      075C 0740 A
1416 075D 0342 A      IDDOT: .WORD  DOCOL,PAD,LIT,0010,LIT,05F5F
      075E 0686 A
      075F 0103 A
      0760 0010 A
      0761 0103 A
      0762 5F5F A
1417 0763 0658 A      .WORD  FILL,DUP,PFA,LFA,OVER,SUB
      0764 02DD A
      0765 04C0 A
      0766 04A3 A
      0767 02C9 A
      0768 0450 A
1418 0769 0686 A      .WORD  PAD,SWAP,MOVE,PAD,COUNT
      076A 02D5 A
      076B 0201 A
      076C 0686 A
      076D 058E A
1419 076E 0103 A      .WORD  LIT,001F,AND,TYPE,SPACE,SEMIS
      076F 001F A
      0770 023F A
      0771 0599 A
      0772 0475 A
      0773 026A A

1420                      ;
1421                      ; *****
1422                      ; *                CREATE                *
1423                      ; *****
1424                      ;
1425                      ; : CREATE  SP@  HERE  50  +  <  2  ?ERROR  -FIND
1426                      ;      IF  DROP  NFA  ID.  4  MESSAGE  SPACE
1427                      ;      ENDIF  HERE  DUP  BYTE  DUP  C@
1428                      ;      WIDTH  @  MIN  DUP  CELL  1+  ALLOT
1429                      ;      OVER  A0  TOGGLE  +  80  TOGGLE
1430                      ;      LATEST  ,  CURRENT  @  !
1431                      ;      HERE  1+  ,  ;
1432                      ;
1433 0774 8643 A      HEAD  ORD,6,LONG,'C'/256
1434 0775 5245 A      .WORD  'RE','AT','E'+EVEN,IDDOT-3
      0776 4154 A

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0777 C520 A
0778 075A A
1435 0779 0342 A CREATE: .WORD DOCOL, SPAT, HERE, LIT, 0050, PLUS
077A 0255 A
077B 043A A
077C 0103 A
077D 0050 A
077E 029F A
1436 077F 045D A .WORD LESS, TWO, QERROR, DFIND, ZBRAN
0780 037E A
0781 04D6 A
0782 0727 A
0783 0124 A
1437 0784 0008 A .WORD CREAT1-., DROP, NFA, IDDOT
0785 02D0 A
0786 04B1 A
0787 075D A
1438 0788 0103 A .WORD LIT, 4, MESS, SPACE.
0789 0004 A
078A 0A05 A
078B 0475 A
1439 078C 043A A CREAT1: .WORD HERE, DUP, BYTE, DUP, CAT, WIDTH, AT
078D 02DD A
078E 02FD A
078F 02DD A
0790 0311 A
0791 03BE A
0792 030B A
1440 0793 08CF A .WORD MIN, DUP, CELL, ONEP, ALLOT, OVER
0794 02DD A
0795 0305 A
0796 042B A
0797 0442 A
0798 02C9 A
1441 0799 0103 A .WORD LIT, 00A0, TOGGLE, PLUS, LIT, 0080
079A 00A0 A
079B 02ED A
079C 029F A
079D 0103 A
079E 0080 A
1442 079F 02ED A .WORD TOGGLE, LATEST, COMMA, CURR, AT
07A0 049B A
07A1 0448 A
07A2 0401 A
07A3 030B A
1443 07A4 031D A .WORD STORE, HERE, ONEP, COMMA, SEMIS
07A5 043A A
07A6 042B A
07A7 0448 A
07A8 026A A
1444 ;
1445 ;*****
1446 ;* [COMPILE], LITERAL, DLITERAL *
1447 ;*****
1448 ;

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1449	07A9	C95B	A	HEAD	IMM,9,LONG,'['/256
1450	07AA	434F	A	.WORD	'CO','MP','IL','E']+ODD,CREATE-5
	07AB	4D50	A		
	07AC	494C	A		
	07AD	45DD	A		
	07AE	0774	A		
1451	07AF	0342	A	BCOMP: .WORD	DOCOL,DFIND,ZEQU,ZERO,QERROR
	07B0	0727	A		
	07B1	028F	A		
	07B2	0376	A		
	07B3	04D6	A		
1452	07B4	02D0	A	.WORD	DROP,CFA,COMMA,SEMIS
	07B5	04AA	A		
	07B6	0448	A		
	07B7	026A	A		
1453					;
1454	07B8	C74C	A	HEAD	IMM,7,LONG,'L'/256
1455	07B9	4954	A	.WORD	'IT','ER','AL'+ODD,BCOMP-6
	07BA	4552	A		
	07BB	41CC	A		
	07BC	07A9	A		
1456	07BD	0342	A	LITER: .WORD	DOCOL,STATE,AT,ZBRAN
	07BE	0 D7	A		
	07BF	030B	A		
	07C0	0124	A		
1457	07C1	0004	A	.WORD	LITER1-.,COMPIL,LIT,COMMA
	07C2	0521	A		
	07C3	0103	A		
	07C4	0448	A		
1458	07C5	026A	A	LITER1: .WORD	SEMIS
1459					;
1460	07C6	C844	A	HEAD	IMM,8,LONG,'D'/256
1461	07C7	4C49	A	.WORD	'LI','TE','RA','L'+EVEN,LITER-5
	07C8	5445	A		
	07C9	5241	A		
	07CA	CC20	A		
	07CB	07B8	A		
1462	07CC	0342	A	DLITER: .WORD	DOCOL,STATE,AT,ZBRAN
	07CD	0407	A		
	07CE	030B	A		
	07CF	0124	A		
1463	07D0	0004	A	.WORD	DLITER1-.,SWAP,LITER,LITER
	07D1	02D5	A		
	07D2	07BD	A		
	07D3	07BD	A		
1464	07D4	026A	A	DLITER1: .WORD	SEMIS
1465					;
1466					: ?STACK SO @ SP@ < L ?ERROR
1467					SP@ HERE 42 + < 7 ?ERROR ;
1468					;
1469	07D5	863F	A	HEAD	ORD,6,LONG,'?'/256
1470	07D6	5354	A	.WORD	'ST','AC','K'+EVEN,DLITER-6
	07D7	4143	A		
	07D8	CB20	A		
	07D9	07C6	A		

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1471 07DA 0342 A QSTACK: .WORD DOCOL,SZERO,AT,SPAT,LESS
      07DB 03AE A
      07DC 030B A
      07DD 0255 A
      07DE 045D A
1472 07DF 037A A .WORD ONE,QERROR,SPAT,HERE,LIT,0042
      07E0 04D6 A
      07E1 0255 A
      07E2 043A A
      07E3 0103 A
      07E4 0042 A
1473 07E5 029F A .WORD PLUS,LESS,LIT,7,QERROR,SEMIS
      07E6 045D A
      07E7 0103 A
      07E8 0007 A
      07E9 04D6 A
      07EA 026A A
1474 ;
1475 ;*****
1476 ;* INTERPRET *
1477 ;*****
1478 ;
1479 07EB 8949 A HEAD ORD,9,LONG,'I'/256
1480 07EC 4E54 A .WORD 'NT','ER','PR','ET'+ODD,QSTACK-5
      07ED 4552 A
      07EE 5052 A
      07EF 45D4 A
      07F0 07D5 A
1481 07F1 0342 A INTER: .WORD DOCOL
1482 07F2 0727 A INTER1: .WORD DFIND,ZBRAN
      07F3 0124 A
1483 07F4 000F A .WORD INTER4-.,STATE,AT,LESS,ZBRAN
      07F5 0407 A
      07F6 030B A
      07F7 045D A
      07F8 0124 A
1484 07F9 0005 A .WORD INTER2-.,CFA,COMMA,BRAN
      07FA 04AA A
      07FB 0448 A
      07FC 011B A
1485 07FD 0003 A .WORD INTER3-.
1486 07FE 04AA A INTER2: .WORD CFA,EXEC
      07FF 0112 A
1487 0800 07DA A INTER3: .WORD QSTACK,BRAN
      0801 011B A
1488 0802 000E A .WORD INTER7-.
1489 0803 043A A INTER4: .WORD HERE,NUMB,DPL,AT,ONEP,ZBRAN
      0804 06FA A
      0805 0412 A
      0806 030B A
      0807 042B A
      0808 0124 A
1490 0809 0004 A .WORD INTER5-.,DLITER,BRAN
      080A 07CC A
      080B 011B A

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1491 080C 0003 A          .WORD    INTER6-.
1492 080D 02D0 A    INTER5: .WORD    DROP,LITER
      080E 07BD A
1493 080F 07DA A    INTER6: .WORD    QSTACK
1494 0810 011B A    INTER7: .WORD    BRAN
1495 0811 FFE1 A          .WORD    INTER1-.,SEMIS
      0812 026A A

1496                      ;
1497                      ;*****
1498                      ;* IMMEDIATE, VOCABULARY, DEFINITIONS, FORTH, ( *
1499                      ;*****
1500                      ;
1501                      ; : IMMEDIATE LATEST BYTE 40 TOGGLE ;
1502                      ;
1503 0813 8949 A          HEAD    ORD,9,LONG,'I'/256
1504 0814 4D4D A          .WORD    'MM','ED','IA','TE'+ODD,INTER-6
      0815 4544 A
      0816 4941 A
      0817 54C5 A
      0818 07EB A
1505 0819 0342 A    IMMED:  .WORD    DOCOL,LATEST,BYTE
      081A 049B A
      081B 02FD A
1506 081C 0103 A          .WORD    LIT,0040,TOGGLE,SEMIS
      081D 0040 A
      081E 02ED A
      081F 026A A

1507                      ;
1508                      ; : VOCABULARY <BUILDS 81A0 , CURRENT @
1509                      ; CFA , HERE VOC-LINK @ , VOC-LINK !
1510                      ; DOES> 1+ CONTEXT ! ;
1511                      ;
1512 0820 8A56 A          HEAD    ORD,10,LONG,'V'/256
1513 0821 4F43 A          .WORD    'OC','AB','UL','AR','Y'+EVEN,IMMED-6
      0822 4142 A
      0823 554C A
      0824 4152 A
      0825 D920 A
      0826 0813 A
1514 0827 0342 A    VOCAB:  .WORD    DOCOL,BUILDS,LIT,081A0,COMMA
      0828 0575 A
      0829 0103 A
      082A 81A0 A
      082B 04 48 A
1515 082C 0401 A          .WORD    CURR,AT,CFA,COMMA,HERE,VOCL
      082D 030B A
      082E 04AA A
      082F 0448 A
      0830 043A A
      0831 03D8 A
1516 0832 030B A          .WORD    AT,COMMA,VOCL,STORE,DOES
      0833 0448 A
      0834 03D8 A
      0835 031D A
      0836 057D A

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1517 0837 042B A DOVOC: .WORD ONEP,CONT,STORE,SEMIS
      0838 03FA A
      0839 031D A
      083A 026A A
1518 ;
1519 083B C546 A HEAD IMM,5,LONG,'F'/256
1520 083C 4F52 A .WORD 'OR','TH'+ODD,VOCAB-7
      083D 54C8 A
      083E 0820 A
1521 083F 0583 A FORTH: .WORD DODOES,DOVOC,081A0,TASK-4,0
      0840 0837 A
      0841 81A0 A
      0842 0C65 A
      0843 0000 A
1522 ;
1523 0844 8B44 A HEAD ORD,11,LONG,'D'/256
1524 0845 4546 A .WORD 'EF','IN','IT','IO','NS'+ODD,FORTH-4
      0846 494E A
      0847 4954 A
      0848 494F A
      0849 4ED3 A
      084A 083B A
1525 084B 0342 A DEFIN: .WORD DOCOL,CONT,AT,CURR,STORE,SEMIS
      084C 03FA A
      084D 030B A
      084E 0401 A
      084F 031D A
      0850 026A A
1526 ;
1527 0851 C1A8 A HEAD IMM,1,SHORT,'('/256
1528 0852 0844 A .WORD DEFIN-7
1529 0853 0342 A PAREN: .WORD DOCOL,LIT,')'/256,WORD,SEMIS
      0854 0103 A
      0855 0029 A
      0856 06A8 A
      0857 026A A
1530 ;
1531 ;*****
1532 ;* QUIT, ABORT *
1533 ;*****
1534 ;
1535 0858 8451 A HEAD ORD,4,LONG,'Q'/256
1536 0859 5549 A .WORD 'UI','T'+EVEN,PAREN-2
      085A D420 A
      085B 0851 A
1537 085C 0342 A QUIT: .WORD DOCOL,ZERO,BLK,STORE,LBRAC
      085D 0376 A
      085E 03DD A
      085F 031D A
      0860 052C A
1538 0861 0262 A QUITI: .WORD RPSTOR,CR,QUERY,INTER
      0862 01FC A
      0863 062D A
      0864 07F1 A
1539 0865 0407 A .WORD STATE,AT,ZEQU,ZBRAN

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    0866 030B A
    0867 028F A
    0868 0124 A
1540 0869 0004 A      .WORD    QUIT2-.,PDOTQ
    086A 05CA A
1541 086B 0320 A      STRING   3,' '/256
1542 086C 4F4B A      .ASCII  'OK'
1543 086D 011B A      QUIT2:  .WORD    BRAN
1544 086E FFF3 A      .WORD    QUIT1-.,SEMIS
    086F 026A A
1545
1546 ;
1547 ; : ABORT  SP!  DECIMAL  DRO  CR
1548 ;      ." PACE FORTH  V 4.0"  [COMPILE]
1549 ;      FORTH  DEFINITIONS  QUIT  ;
    ;
1550 0870 8541 A      HEAD     ORD,5,LONG,'A'/256
1551 0871 424F A      .WORD    'BO','RT'+ODD,QUIT-4
    0872 52D4 A
    0873 0858 A
1552 0874 0342 A      ABORT:  .WORD    DOCOL,SPSTOR,DEC,DRONE,CR,PDOTQ
    0875 025B A
    0876 0553 A
    0877 097F A
    0878 01FC A
    0879 05CA A
1553 087A 1150 A      STRING   17,'P'/256
1554 087B 4143 A      .ASCII  'ACE FORTH  V 4.0'
    087C 4520 A
    087D 464F A
    087E 5254 A
    087F 4820 A
    0880 2056 A
    0881 2034 A
    0882 2E30 A
1555 0883 083F A      .WORD    FORTH,DEFIN,QUIT,SEMIS
    0884 084B A
    0885 085C A
    0886 026A A
1556 ;
1557 ;*****
1558 ;*                COLD START                *
1559 ;*****
1560 ;
1561 0887 8443 A      HEAD     ORD,4,LONG,'C'/256
1562 0888 4F4C A      .WORD    'OL','D'+EVEN,ABORT-4
    0889 C420 A
    088A 0870 A
1563 088B 088C A      COLD:   .WORD    .+1
1564 088C 1423 A      CENT:   JSR      INIT                ; (INSTALL. DEPEND.)
1565 088D C912 A      LD      X,ORGPTR                ; PTR TO STARTUP LITS
1566 088E C206 A      LD      0,06(X)                ; INITIALIZE
1567 088F D1B2 A      ST      0,FORTH+3                ; FORTH VOCABULARY
1568 0890 5108 A      LI      1,08                    ; INIT 8 USER VARS
1569 0891 1902 A      JMP     LDUP
1570 0892 5105 A      WENT:   LI      1,05                ; INIT 5 USER VARS

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1571 0893 C90C A          LD      X,ORGPTR          ; PTR TO STARTUP LITS
1572 0894 CE08 A  LDUP:  LD      Y,08(X)          ; INITIALIZE
1573 0895 DC22 A          ST      Y,UP          ; USER POINTER
1574 0896 C209 A  LDUVS:  LD      0,09(X)          ; MOVE FROM LITERAL
1575 0897 D303 A          ST      0,03(Y)          ; AREA TO USER AREA
1576 0898 7A01 A          AISZ   X,1
1577 0899 7B01 A          AISZ   Y,1
1578 089A 79FF A          AISZ   1,-1
1579 089B 19FA A          JMP     LDUVS
1580 089C C502 A          LD      IP,IPO          ; POINT IP TO ABORT
1581 089D 9900 A          JMP     @START          ; START AT RP!
1582 089E 0263 A  START:  .WORD   RPSTOR+1
1583 089F 0875 A  IPO:    .WORD   ABORT+1
1584 08A0 0010 A  ORGPTR: .WORD   ORIG          ; START OF LITERALS
1585
1586 ;
1587 ;*****
1588 ;*                               MATH UTILITY                               *
1589 ;*****
1590 08A1 8453 A          HEAD   ORD,4,LONG,'S'/256
1591 08A2 2D3E A          .WORD  '->','D'+EVEN,COLD-4
      08A3 C420 A
      08A4 0887 A
1592 08A5 08A6 A  STOD:  .WORD   .+1
1593 08A6 5000 A          LI     0,0
1594 08A7 9F00 A          SKG   0,0(SP)
1595 08A8 98F9 I          JMP     PUSH
1596 08A9 50FF A          LI     0,-1
1597 08AA 98F9 I          JMP     PUSH
1598 ;
1599 08AB 822B A          HEAD   ORD,2,LONG,'+' /256
1600 08AC AD20 A          .WORD  '-'+EVEN,STOD-4
      08AD 08A1 A
1601 08AE 0342 A  PMI:   .WORD   DOCOL,ZLESS,ZBRAN
      08AF 0297 A
      08B0 0124 A
1602 08B1 0002 A          .WORD  PMI1-.,MINUS
      08B2 02B4 A
1603 08B3 026A A  PMI1:  .WORD   SEMIS
1604 ;
1605 08B4 8344 A          HEAD   ORD,3,LONG,'D' /256
1606 08B5 2BAD A          .WORD  '+-' +ODD,PMI-3
      08B6 08AB A
1607 08B7 0342 A  DPMI:  .WORD   DOCOL,ZLESS,ZBRAN
      08B8 0297 A
      08B9 0124 A
1608 08BA 0002 A          .WORD  DPMI1-.,DMINUS
      08BB 02BD A
1609 08BC 026A A  DPMI1: .WORD   SEMIS
1610 ;
1611 08BD 8341 A          HEAD   ORD,3,LONG,'A' /256
1612 08BE 42D3 A          .WORD  'BS'+ODD,DPMI-3
      08BF 08B4 A
1613 08C0 0342 A  ABS:   .WORD   DOCOL,DUP,PMI,SEMIS
      08C1 02DD A

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    08C2 08AE A
    08C3 026A A
1614      ;
1615 08C4 8444 A      HEAD      ORD,4,LONG,'D'/256
1616 08C5 4142 A      .WORD      'AB','S'+EVEN,ABS-3
    08C6 D320 A
    08C7 08BD A
1617 08C8 0342 A      DABS:      .WORD      DOCOL,DUP,DPMI,SEMIS
    08C9 02DD A
    08CA 08B7 A
    08CB 026A A
1618      ;
1619 08CC 834D A      HEAD      ORD,3,LONG,'M'/256
1620 08CD 49CE A      .WORD      'IN'+ODD,DABS-4
    08CE 08C4 A
1621 08CF 08D0 A      MIN:      .WORD      .+1
1622 08D0 C300 A      LD        0,0(SP)      ; GET BOTTOM
1623 08D1 9F01 A      SKG       0,1(SP)      ; COMPARE WITH SECOND
1624 08D2 98F6 I      JMP       BIN          ; IF BOTTOM <= SECOND
1625 08D3 98FA I      JMP       POP          ; IF BOTTOM > SECOND
1626      ;
1627 08D4 834D A      HEAD      ORD,3,LONG,'M'/256
1628 08D5 41D8 A      .WORD      'AX'+ODD,MIN-3
    08D6 08CC A
1629 08D7 08D8 A      MAX:      .WORD      .+1
1630 08D8 C300 A      LD        0,0(SP)      ; GET BOTTOM
1631 08D9 9F01 A      SKG       0,1(SP)      ; COMPARE WITH SECOND
1632 08DA 98FA I      JMP       POP          ; IF BOTTOM <= SECOND
1633 08DB 98F6 I      JMP       BIN          ; IF BOTTOM > SECOND
1634      ;
1635      ;*****
1636      ;          SIGNED MATH
1637      ;*****
1638      ;
1639 08DC 824D A      HEAD      ORD,2,LONG,'M'/256
1640 08DD AA20 A      .WORD      '*'+EVEN,MAX-3
    08DE 08D4 A
1641 08DF 0342 A      MSTAR:    .WORD      DOCOL,OVER,OVER,XOR,TOR
    08E0 02C9 A
    08E1 02C9 A
    08E2 024D A
    08E3 027B A
1642 08E4 08C0 A      .WORD      ABS,SWAP,ABS,USTAR
    08E5 02D5 A
    08E6 08C0 A
    08E7 0213 A
1643 08E8 0283 A      .WORD      FROMR,DPMI,SEMIS
    08E9 08B7 A
    08EA 026A A
1644      ;
1645 08EB 824D A      HEAD      ORD,2,LONG,'M'/256
1646 08EC AF20 A      .WORD      '/'+EVEN,MSTAR-3
    08ED 08DC A
1647 08EE 0342 A      MSLASH:   .WORD      DOCOL,OVER,TOR,TOR
    08EF 02C9 A

```

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	08F0	027B	A			
	08F1	027B	A			
1648	08F2	08C8	A	.WORD	DABS,R,ABS,USLASH	
	08F3	0289	A			
	08F4	08C0	A			
	08F5	0227	A			
1649	08F6	0283	A	.WORD	FROMR,R,XOR,PMI,SWAP	
	08F7	0289	A			
	08F8	024D	A			
	08F9	08AE	A			
	08FA	02D5	A			
1650	08FB	0283	A	.WORD	FROMR,PMI,SWAP,SEMIS	
	08FC	08AE	A			
	08FD	02D5	A			
	08FE	026A	A			
1651						;
1652	08FF	81AA	A	HEAD	ORD,1,SHORT,'*/256	
1653	0900	08EB	A	.WORD	MSLASH-3	
1654	0901	0342	A	STAR:	.WORD	DOCOL,USTAR,DROP,SEMIS
	0902	0213	A			
	0903	02D0	A			
	0904	026A	A			
1655						;
1656	0905	842F	A	HEAD	ORD,4,LONG,'//256	
1657	0906	4D4F	A	.WORD	'MO','D'+EVEN,STAR-2	
	0907	C420	A			
	0908	08FF	A			
1658	0909	0342	A	SLMOD:	.WORD	DOCOL,TOR,STOD,FROMR,MSLASH,SEMIS
	090A	027B	A			
	090B	08A5	A			
	090C	0283	A			
	090D	08EE	A			
	090E	026A	A			
1659						;
1660	090F	81AF	A	HEAD	ORD,1,SHORT,'//256	
1661	0910	0905	A	.WORD	SLMOD-4	
1662	0911	0342	A	SLASH:	.WORD	DOCOL,SLMOD,SWAP,DROP,SEMIS
	0912	0909	A			
	0913	02D5	A			
	0914	02D0	A			
	0915	026A	A			
1663						;
1664	0916	834D	A	HEAD	ORD,3,LONG,'M'/256	
1665	0917	4FC4	A	.WORD	'OD'+ODD,SLASH-2	
	0918	090F	A			
1666	0919	0342	A	MOD:	.WORD	DOCOL,SLMOD,DROP,SEMIS
	091A	0909	A			
	091B	02D0	A			
	091C	026A	A			
1667						;
1668	091D	852A	A	HEAD	ORD,5,LONG,'*/256	
1669	091E	2F4D	A	.WORD	'/M','OD'+ODD,MOD-3	
	091F	4FC4	A			
	0920	0916	A			
1670	0921	0342	A	SSMOD:	.WORD	DOCOL,TOR,MSTAR,FROMR,MSLASH,SEMIS

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    0922 027B A
    0923 08DF A
    0924 0283 A
    0925 08EE A
    0926 026A A
1671
1672 0927 822A A      ;      HEAD      ORD,2,LONG,'*/256
1673 0928 AF20 A      .WORD      '/'+EVEN,SSMOD-4
    0929 091D A
1674 092A 0342 A      SSLASH: .WORD      DOCOL,SSMOD,SWAP,DROP,SEMIS
    092B 0921 A
    092C 02D5 A
    092D 02D0 A
    092E 026A A
1675
1676 092F 854D A      ;      HEAD      ORD,5,LONG,'M'/256
1677 0930 2F4D A      .WORD      '/M','OD'+ODD,SSLASH-3
    0931 4FC4 A
    0932 0927 A
1678 0933 0342 A      MSMOD: .WORD      DOCOL,TOR,ZERO,R,USLASH,FROMR
    0934 027B A
    0935 0376 A
    0936 0289 A
    0937 0227 A
    0938 0283 A
1679 0939 02D5 A      .WORD      SWAP,TOR,USLASH,FROMR,SEMIS
    093A 027B A
    093B 0227 A
    093C 0283 A
    093D 026A A
1680
1681
1682
1683
1684
1685 093E 8355 A      ;
1686 093F 53C5 A      ;*****
    0940 092F A      ;*      DISC UTILITY, GENERAL USE      *
1687 0941 0367 A      ;*****
    0942 1DF0 A      ;
1688
1689 0943 8450 A      ;      HEAD      ORD,3,LONG,'U'/256
1690 0944 5245 A      .WORD      'SE'+ODD,MSMOD-4
    0945 D620 A
    0946 093E A
1691 0947 0367 A      USE: .WORD      DOVAR,BUFFS
    0948 1DF0 A
1688
1689 0943 8450 A      ;
1690 0944 5245 A      ;      HEAD      ORD,4,LONG,'P'/256
    0945 D620 A      .WORD      'RE','V'+EVEN,USE-3
    0946 093E A
1691 0947 0367 A      PREV: .WORD      DOVAR,BUFFS
    0948 1DF0 A
1692
1693 0949 842B A      ;
1694 094A 4255 A      .WORD      HEAD      ORD,4,LONG,'+'/256
    094B C620 A      .WORD      'BU','F'+EVEN,PREV-4
    094C 0943 A
1695 094D 0342 A      PBUF: .WORD      DOCOL,LIT,BLKSIZ/2+2,PLUS
    094E 0103 A
    094F 0042 A

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0950	029F	A			
1696	0951	02DD	A	.WORD	DUP,LIMIT,EQUAL,ZBRAN
	0952	0393	A		
	0953	0457	A		
	0954	0124	A		
1697	0955	0003	A	.WORD	PBUF1-.,DROP,FIRST
	0956	02D0	A		
	0957	038D	A		
1698	0958	02DD	A	PBUF1: .WORD	DUP,PREV,AT,SUB,SEMIS
	0959	0947	A		
	095A	030B	A		
	095B	0450	A		
	095C	026A	A		
1699					
1700	095D	8655	A	HEAD	ORD,6,LONG,'U'/256
1701	095E	5044	A	.WORD	'PD','AT','E'+EVEN,PBUF-4
	095F	4154	A		
	0960	C520	A		
	0961	0949	A		
1702	0962	0342	A	UPDATE: .WORD	DOCOL,PREV,AT,AT,LIT,08000
	0963	0947	A		
	0964	030B	A		
	0965	030B	A		
	0966	0103	A		
	0967	8000	A		
1703	0968	0246	A	.WORD	OR,PREV,AT,STORE,SEMIS
	0969	0947	A		
	096A	030B	A		
	096B	031D	A		
	096C	026A	A		
1704					
1705	096D	8D45	A	HEAD	ORD,13,LONG,'E'/256
1706	096E	4D50	A	.WORD	'MP','TY','-B','UF'
	096F	5459	A		
	0970	2D42	A		
	0971	5546	A		
1707	0972	4645	A	.WORD	'FE','RS'+ODD,UPDATE-5
	0973	52D3	A		
	0974	095D	A		
1708	0975	0342	A	MTBUF: .WORD	DOCOL,FIRST,LIMIT
	0976	038D	A		
	0977	0393	A		
1709	0978	02C9	A	.WORD	OVER,SUB,ERASE,SEMIS
	0979	0450	A		
	097A	0668	A		
	097B	026A	A		
1710					
1711	097C	8344	A	HEAD	ORD,3,LONG,'D'/256
1712	097D	52B1	A	.WORD	'R1'+ODD,MTBUF-8
	097E	096D	A		
1713	097F	0342	A	DRONE: .WORD	DOCOL,ZERO,OFFSET,STORE,SEMIS
	0980	0376	A		
	0981	03F3	A		
	0982	031D	A		
	0983	026A	A		

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```

1714      ;
1715 0984 8344 A      HEAD      ORD,3,LONG,'D'/256
1716 0985 52B2 A      .WORD      'R2'+ODD,DRONE-3
      0986 097C A
1717 0987 0342 A      DRTWO:    .WORD      DOCOL,LIT,2000
      0988 0103 A
      0989 07D0 A
1718 098A 03F3 A      .WORD      OFFSET,STORE,SEMIS
      098B 031D A
      098C 026A A

1719      ;
1720      ;*****
1721      ;*                BUFFER                *
1722      ;*****
1723      ;
1724      ; : BUFFER      USE @ DUP >R BEGIN +BUF UNTIL
1725      ;      USE ! R @ 0< IF R 1+ R @ 7FFF
1726      ;      AND 0 R/W ENDIF
1727      ;      R ! R PREV ! R> 1+ ;
1728      ;
1729 098D 8642 A      HEAD      ORD,6,LONG,'B'/256
1730 098E 5546 A      .WORD      'UF','FE','R'+EVEN,DRTWO-3
      098F 4645 A
      0990 D220 A
      0991 0984 A
1731 0992 0342 A      BUFFER:  .WORD      DOCOL,USE,AT,DUP,TOR
      0993 0941 A
      0994 030B A
      0995 02DD A
      0996 027B A
1732 0997 094D A      BUFF1:   .WORD      PBUF,ZBRAN
      0998 0124 A
1733 0999 FFFE A      .WORD      BUFF1-.,USE,STORE
      099A 0941 A
      099B 031D A
1734 099C 0289 A      .WORD      R,AT,ZLESS,ZBRAN
      099D 030B A
      099E 0297 A
      099F 0124 A
1735 09A0 000A A      .WORD      BUFF2-.,R,ONEP,R,AT
      09A1 0289 A
      09A2 042B A
      09A3 0289 A
      09A4 030B A
1736 09A5 0103 A      .WORD      LIT,07FFF,AND,ZERO,RW
      09A6 7FFF A
      09A7 023F A
      09A8 0376 A
      09A9 0A63 A
1737 09AA 0289 A      BUFF2:   .WORD      R,STORE,R,PREV,STORE
      09AB 031D A
      09AC 0289 A
      09AD 0947 A
      09AE 031D A
1738 09AF 0283 A      .WORD      FROMR,ONEP,SEMIS

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    09B0 042B A
    09B1 026A A
1739
1740
1741
1742
1743
1744
1745
1746
1747
1748
1749
1750
1751
1752 09B2 8542 A
1753 09B3 4C4F A
    09B4 43CB A
    09B5 098D A
1754 09B6 0342 A
    09B7 03F3 A
    09B8 030B A
    09B9 029F A
    09BA 027B A
1755 09BB 0947 A
    09BC 030B A
    09BD 02DD A
    09BE 030B A
    09BF 0289 A
1756 09C0 0450 A
    09C1 02DD A
    09C2 029F A
    09C3 0124 A
1757 09C4 001A A
1758 09C5 094D A
    09C6 028F A
    09C7 0124 A
1759 09C8 000A A
    09C9 02D0 A
    09CA 0289 A
    09CB 0992 A
1760 09CC 02DD A
    09CD 0289 A
    09CE 037A A
    09CF 0A63 A
    09D0 037A A
    09D1 0450 A
1761 09D2 02DD A
    09D3 030B A
    09D4 0289 A
    09D5 0450 A
    09D6 02DD A
1762 09D7 029F A
    09D8 028F A
    09D9 0124 A
;
;*****
;*          BLOCK          *
;*****
;
;   : BLOCK  OFFSET @ + >R
;     PREV @ DUP @ R - DUP +
;     IF BEGIN +BUF 0=
;         IF DROP R BUFFER
;             DUP R 1 R/W 1 - ENDIF
;         DUP @ R - DUP + 0= UNTIL
;     DUP PREV ! ENDIF R> DROP 1+ ;
;
HEAD ORD,5,LONG,'B'/256
.WORD 'LO','CK'+ODD,BUFFER-5
BLOCK: .WORD DOCOL,OFFSET,AT,PLUS,TOR
.WORD PREV,AT,DUP,AT,R
.WORD SUB,DUP,PLUS,ZBRAN
BLOCK1: .WORD BLOCK3-.
        PBUF,ZEQU,ZBRAN
.WORD BLOCK2-.,DROP,R,BUFFER
.WORD DUP,R,ONE,RW,ONE,SUB
BLOCK2: .WORD DUP,AT,R,SUB,DUP
.WORD PLUS,ZEQU,ZBRAN

```



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```

1763 09DA FFEB A          .WORD    BLOCK1-.,DUP,PREV,STORE
      09DB 02DD A
      09DC 0947 A
      09DD 031D A
1764 09DE 0283 A    BLOCK3: .WORD    FROMR,DROP,ONEP,SEMIS
      09DF 02D0 A
      09E0 042B A
      09E1 026A A

1765 ;
1766 ;*****
1767 ;*          TEXT OUTPUT FORMATTING          *
1768 ;*****
1769 ;
1770 ;      : (LINE)    >R 40 B/BUF */MOD R> B/SCR *
1771 ;      + BLOCK BYTE + 40 ;
1772 ;
1773 09E2 8628 A          HEAD    ORD,6,LONG,'('/256
1774 09E3 4C49 A          .WORD    'LI','NE','')+EVEN,BLOCK-4
      09E4 4E45 A
      09E5 A920 A
      09E6 09B2 A
1775 09E7 0342 A    PLINE:  .WORD    DOCOL,TOR,LIT,64,BBUF,SSMOD
      09E8 027B A
      09E9 0103 A
      09EA 0040 A
      09EB 0399 A
      09EC 0921 A
1776 09ED 0283 A          .WORD    FROMR,BSCR,STAR,PLUS,BLOCK
      09EE 039F A
      09EF 0901 A
      09F0 029F A
      09F1 09B6 A
1777 09F2 02FD A          .WORD    BYTE,PLUS,LIT,64,SEMIS
      09F3 029F A
      09F4 0103 A
      09F5 0040 A
      09F6 026A A

1778 ;
1779 09F7 852E A          HEAD    ORD,5,LONG,'.'/256
1780 09F8 4C49 A          .WORD    'LI','NE'+ODD,PLINE-5
      09F9 4EC5 A
      09FA 09E2 A
1781 09FB 0342 A    DLINE:  .WORD    DOCOL,PLINE,DTRAIL,TYPE,SEMIS
      09FC 09E7 A
      09FD 05B0 A
      09FE 0599 A
      09FF 026A A

1782 ;
1783 0A00 874D A          HEAD    ORD,7,LONG,'M'/256
1784 0A01 4553 A          .WORD    'ES','SA','GE'+ODD,DLINE-4
      0A02 5341 A
      0A03 47C5 A
      0A04 09F7 A
1785 0A05 0342 A    MESS:   .WORD    DOCOL,WARN,AT,ZBRAN
      0A06 03C5 A

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    OA07 030B A
    OA08 0124 A
1786 OA09 000E A      .WORD   MESS2-. ,DDUP,ZBRAN
    OA0A 047D A
    OA0B 0124 A
1787 OA0C 0009 A      .WORD   MESS1-. ,LIT,4,OFFSET,AT
    OA0D 0103 A
    OA0E 0004 A
    OA0F 03F3 A
    OA10 030B A
1788 OA11 039F A      .WORD   BSCR,SLASH,SUB,DLINE
    OA12 0911 A
    OA13 0450 A
    OA14 09FB A
1789 OA15 011B A      MESS1:  .WORD   BRAN
1790 OA16 0007 A      .WORD   MESS3-.
1791 OA17 05CA A      MESS2:  .WORD   PDOTQ
1792 OA18 064D A      STRING  6,'M'/256
1793 OA19 5347 A      .ASCII  'SG , '
    OA1A 2023 A
    OA1B 2020 A
1794 OA1C 0BD5 A      .WORD   DOT
1795 OA1D 026A A      MESS3:  .WORD   SEMIS
1796 ;
1797 ;*****
1798 ;*                                LOAD, --> *
1799 ;*****
1800 ;
1801 OA1E 844C A      HEAD   ORD,4,LONG,'L'/256
1802 OA1F 4F41 A      .WORD  'OA','D'+EVEN,MESS-5
    OA20 C420 A
    OA21 0A00 A
1803 OA22 0342 A      LOAD:  .WORD   DOCOL,BLK,AT,TOR,IN,AT,TOR
    OA23 03DD A
    OA24 030B A
    OA25 027B A
    OA26 03E2 A
    OA27 030B A
    OA28 027B A
1804 OA29 0376 A      .WORD   ZERO,IN,STORE,BSCR,STAR,BLK,STORE
    OA2A 03E2 A
    OA2B 031D A
    OA2C 039F A
    OA2D 0901 A
    OA2E 03DD A
    OA2F 031D A
1805 OA30 07F1 A      .WORD   INTER,FROMR,IN,STORE
    OA31 0283 A
    OA32 03E2 A
    OA33 031D A
1806 OA34 0283 A      .WORD   FROMR,BLK,STORE,SEMIS
    OA35 03DD A
    OA36 031D A
    OA37 026A A
1807 ;

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# 0A38 - 0A58

ARROW	0A3B	A
PEMIT	0A49	A
PKEY	0A4D	A
PQTERM	0A4F	A
PCR	0A53	A

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1850 0A59 035C A HI: .WORD DOCON,HIBLK
      0A5A 3FC0 A
1851 ;
1852 0A5B 824C A HEAD ORD,2,LONG,'L'/256
1853 0A5C CF20 A .WORD 'O'+EVEN,HI-3
      0A5D 0A56 A
1854 0A5E 035C A LO: .WORD DOCON,LOBLK
      0A5F 2000 A
1855 ;
1856 ; : R/W >R DUP 0< 6 ?ERROR ( BLOCK, < 0 ? )
1857 ; B/BUF CELL * LO + ( FWA OF BLOCK )
1858 ; DUP HI > 6 ?ERROR ( TOO HIGH ? )
1859 ; R> IF SWAP ENDIF ( TO OR FROM ? )
1860 ; B/BUF CELL MOVE ; ( TRANSFER DATA )
1861 ;
1862 0A60 8352 A HEAD ORD,3,LONG,'R'/256
1863 0A61 2FD7 A .WORD '/W'+ODD,LO-3
      0A62 0A5B A
1864 0A63 0342 A RW: .WORD DOCOL,TOR,DUP,ZLESS
      0A64 027B A
      0A65 02DD A
      0A66 0297 A
1865 0A67 0103 A .WORD LIT,6,QERROR,BBUF,CELL
      0A68 0006 A
      0A69 04D6 A
      0A6A 0399 A
      0A6B 0305 A
1866 0A6C 0901 A .WORD STAR,LO,PLUS,DUP,HI,GREAT
      0A6D 0A5E A
      0A6E 029F A
      0A6F 02DD A
      0A70 0A59 A
      0A71 0463 A
1867 0A72 0103 A .WORD LIT,6,QERROR,FROMR,ZBRAN
      0A73 0006 A
      0A74 04D6 A
      0A75 0283 A
      0A76 0124 A
1868 0A77 0002 A .WORD RW1-.,SWAP
      0A78 02D5 A
1869 0A79 0399 A RW1: .WORD BBUF,CELL,MOVE,SEMIS
      0A7A 0305 A
      0A7B 0201 A
      0A7C 026A A
1870 ;
1871 ; *****
1872 ; * , FORGET *
1873 ; *****
1874 ;
1875 0A7D C1A7 A HEAD IMM,1,SHORT,'''/256
1876 0A7E 0A60 A .WORD RW-3
1877 0A7F 0342 A TICK: .WORD DOCOL,DFIND,ZEQU,ZERO
      0A80 0727 A
      0A81 028F A
      0A82 0376 A

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```

1878 0A83 04D6 A      .WORD  QERROR,DROP,LITER,SEMIS
      0A84 02D0 A
      0A85 07BD A
      0A86 026A A

1879
1880 ;
1881 ; ***** (((((((*****
      ; : FORGET  CURRENT @ CONTEXT @ ( IS VOCAB )
1882 ; - 18 ?ERROR ( NON-AMBIGUOUS ? )
1883 ; [COMPILE] ' NFA (.HD OF WORD TO FORGET )
1884 ; DUP FENCE @ < 15 ?ERROR ( CMP FENCE )
1885 ; >R VOC-LINK @ ( START WITH LATEST VOCAB )
1886 ; BEGIN R OVER < ( FORGET ENTIRE VOCAB? )
1887 ; WHILE [COMPILE] FORTH DEFINITIONS
1888 ; @ DUP VOC-LINK ! ( UNLINK VOCAB )
1889 ; REPEAT
1890 ; BEGIN DUP 2 - ( START AT PHANTOM NAME )
1891 ; BEGIN PFA LFA @ ( HEAD OF WORD )
1892 ; DUP R < ( FORGETTING IT ? )
1893 ; UNTIL
1894 ; OVER 1 - ! ( NEW HEAD OF VOCAB )
1895 ; @ -DUP 0= ( END OF VOCAB LIST ? )
1896 ; UNTIL
1897 ; R> DP ! ; ( NEW DICTIONARY POINTER )
1898 ;

1899 0A87 8646 A      HEAD  ORD,6,LONG,'F'/256
1900 0A88 4F52 A      .WORD  'OR','GE','T'+EVEN,TICK-2
      0A89 4745 A
      0A8A D420 A
      0A8B 0A7D A
1901 0A8C 0342 A      FORGET: .WORD  DOCOL,CURR,AT,CONT,AT
      0A8D 0401 A
      0A8E 030B A
      0A8F 03FA A
      0A90 030B A
1902 0A91 0450 A      .WORD  SUB,LIT,0018,QERROR
      0A92 0103 A
      0A93 0018 A
      0A94 04D6 A
1903 0A95 0A7F A      .WORD  TICK,NFA,DUP,FENCE,AT,LESS
      0A96 04B1 A
      0A97 02DD A
      0A98 03CB A
      0A99 030B A
      0A9A 045D A
1904 0A9B 0103 A      .WORD  LIT,0015,QERROR,TOR,VOCL,AT
      0A9C 0015 A
      0A9D 04D6 A
      0A9E 027B A
      0A9F 03D8 A
      0AA0 030B A
1905 0AA1 0289 A      FORG1: .WORD  R,OVER,LESS,ZBRAN
      0AA2 02C9 A
      0AA3 045D A
      0AA4 0124 A
1906 0AA5 0009 A      .WORD  FORG2-.,FORTH,DEFIN

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```

    0AA6 083F A
    0AA7 084B A
1907 0AA8 030B A      .WORD    AT,DUP,VOCL,STORE,BRAN
    0AA9 02DD A
    0AAA 03D8 A
    0AAB 031D A
    0AAC 011B A
1908 0AAD FFF4 A      .WORD    FORG1-.
1909 0AAE 02DD A      FORG2:  .WORD    DUP,TWO,SUB
    0AAF 037E A
    0AB0 0450 A
1910 0AB1 04C0 A      FORG3:  .WORD    PFA,LFA,AT,DUP,R,LESS,ZBRAN
    0AB2 04A3 A
    0AB3 030B A
    0AB4 02DD A
    0AB5 0289 A
    0AB6 045D A
    0AB7 0124 A
1911 0AB8 FFF9 A      .WORD    FORG3-.,OVER,ONE,SUB,STORE
    0AB9 02C9 A
    0ABA 037A A
    0ABB 0450 A
    0ABC 031D A
1912 0ABD 030B A      .WORD    AT,DDUP,ZEQU,ZBRAN
    0ABE 047D A
    0ABF 028F A
    0ACO 0124 A
1913 0AC1 FFED A      .WORD    FORG2-.,FROMR,DP,STORE,SEMIS
    0AC2 0283 A
    0AC3 03D0 A
    0AC4 031D A
    0AC5 026A A
1914
1915
1916
1917
1918
    ;
    ;*****
    ;*          CO NDITIONAL COMPILER, PER SHIRA          *
    ;*****
    ;
1919 0AC6 8442 A      HEAD    ORD,4,LONG,'B'/256
1920 0AC7 4143 A      .WORD    'AC','K'+EVEN,FORGET-5
    0AC8 CB20 A
    0AC9 0A87 A
1921 0ACA 0342 A      BACK:  .WORD    DOCOL,HERE,SUB,COMMA,SEMIS
    0ACB 043A A
    0ACC 0450 A
    0ACD 0448 A
    0ACE 026A A
1922
1923 0ACF C542 A      ;
1924 0AD0 4547 A      HEAD    IMM,5,LONG,'B'/256
    .WORD    'EG','IN'+ODD,BACK-4
    0AD1 49CE A
    0AD2 0AC6 A
1925 0AD3 0342 A      BEGIN: .WORD    DOCOL,QCOMP,HERE,ONE,SEMIS
    0AD4 04E3 A
    0AD5 043A A
    0AD6 037A A
  
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	OAD7 026A A			
1926		;		
1927	OAD8 C545 A		HEAD	IMM,5, LONG, 'E'/256
1928	OAD9 4E44 A		.WORD	'ND', 'IF'+ODD, BEGIN-4
	OADA 49C6 A			
	OADB OACF A			
1929	OADC 0342 A	ENDIF:	.WORD	DOCOL, QCOMP, TWO, QPAIRS, HERE
	OADD 04E3 A			
	OADE 037E A			
	OADF 04FB A			
	OAEO 043A A			
1930	OAE1 02C9 A		.WORD	OVER, SUB, SWAP, STORE, SEMIS
	OAE2 0450 A			
	OAE3 02D5 A			
	OAE4 031D A			
	OAE5 026A A			
1931		;		
1932	OAE6 C454 A		HEAD	IMM,4, LONG, 'T'/256
1933	OAE7 4845 A		.WORD	'HE', 'N'+EVEN, ENDIF-4
	OAE8 CE20 A			
	OAE9 OAD8 A			
1934	OAEA 0342 A	THEN:	.WORD	DOCOL, ENDIF, SEMIS
	OAEB OADC A			
	OAEC 026A A			
1935		;		
1936	OAED C244 A		HEAD	IMM,2, LONG, 'D'/256
1937	OAEE CF20 A		.WORD	'O'+EVEN, THEN-4
	OAEF OAE6 A			
1938	OAF0 0342 A	DO:	.WORD	DOCOL, COMPIL, XDO
	OAF1 0521 A			
	OAF2 0155 A			
1939	OAF3 043A A		.WORD	HERE, THREE, SEMIS
	OAF4 0382 A			
	OAF5 026A A			
1940		;		
1941	OAF6 C44C A		HEAD	IMM,4, LONG, 'L'/256
1942	OAF7 4F4F A		.WORD	'OO', 'P'+EVEN, DO-3
	OAF8 D020 A			
	OAF9 OAED A			
1943	OAFa 0342 A	LOOP:	.WORD	DOCOL, THREE, QPAIRS, COMPIL
	OAFB 0382 A			
	OAFc 04FB A			
	OAFD 0521 A			
1944	OAFE 012F A		.WORD	XLOOP, BACK, SEMIS
	OAFF OACA A			
	OB00 026A A			
1945		;		
1946	OB01 C52B A		HEAD	IMM,5, LONG, '+'/256
1947	OB02 4C4F A		.WORD	'LO', 'OP'+ODD, LOOP-4
	OB03 4FD0 A			
	OB04 OAF6 A			
1948	OB05 0342 A	PLOOP:	.WORD	DOCOL, THREE, QPAIRS, COMPIL
	OB06 0382 A			
	OB07 04FB A			
	OB08 0521 A			

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1949	OB09	0140	A		.WORD	XPLOOP, BACK, SEMIS
	OB0A	0ACA	A			
	OB0B	026A	A			
1950						
				;		
1951	OB0C	C555	A		HEAD	IMM, 5, LONG, 'U' / 256
1952	OB0D	4E54	A		.WORD	'NT', 'IL'+ODD, PLOOP-4
	OB0E	49CC	A			
	OB0F	OB01	A			
1953	OB10	0342	A	UNTIL:	.WORD	DOCOL, ONE, QPAIRS, COMPIL
	OB11	037A	A			
	OB12	04FB	A			
	OB13	0521	A			
1954	OB14	0124	A		.WORD	ZBRAN, BACK, SEMIS
	OB15	0ACA	A			
	OB16	026A	A			
1955						
				;		
1956	OB17	C345	A		HEAD	IMM, 3, LONG, 'E' / 256
1957	OB18	4EC4	A		.WORD	'ND'+ODD, UNTIL-4
	OB19	OB0C	A			
1958	OB1A	0342	A	END:	.WORD	DOCOL, UNTIL, SEMIS
	OB1B	OB10	A			
	OB1C	026A	A			
1959						
				;		
1960	OB1D	C541	A		HEAD	IMM, 5, LONG, 'A' / 256
1961	OB1E	4741	A		.WORD	'GA', 'IN'+ODD, END-3
	OB1F	49CE	A			
	OB20	OB17	A			
1962	OB21	0342	A	AGAIN:	.WORD	DOCOL, ONE, QPAIRS, COMPIL
	OB22	037A	A			
	OB23	04FB	A			
	OB24	0521	A			
1963	OB25	011B	A		.WORD	BRAN, BACK, SEMIS
	OB26	0ACA	A			
	OB27	026A	A			
1964						
				;		
1965	OB28	C652	A		HEAD	IMM, 6, LONG, 'R' / 256
1966	OB29	4550	A		.WORD	'EP', 'EA', 'T'+EVEN, AGAIN-4
	OB2A	4541	A			
	OB2B	D420	A			
	OB2C	OB1D	A			
1967	OB2D	0342	A	REPEAT:	.WORD	DOCOL, TOR, TOR, AGAIN, FROMR
	OB2E	027B	A			
	OB2F	027B	A			
	OB30	OB21	A			
	OB31	0283	A			
1968	OB32	0283	A		.WORD	FROMR, TWO, SUB, ENDIF, SEMIS
	OB33	037E	A			
	OB34	0450	A			
	OB35	OADC	A			
	OB36	026A	A			
1969						
				;		
1970	OB37	C249	A		HEAD	IMM, 2, LONG, 'I' / 256
1971	OB38	C620	A		.WORD	'F'+EVEN, REPEAT-5
	OB39	OB28	A			
1972	OB3A	0342	A	IF:	.WORD	DOCOL, COMPIL, ZBRAN, HERE



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    OB3B 0521 A
    OB3C 0124 A
    OB3D 043A A
1973  OB3E 0376 A      .WORD  ZERO,COMMA,TWO,SEMIS
    OB3F 0448 A
    OB40 037E A
    OB41 026A A
1974  ;
1975  OB42 C445 A      HEAD    IMM,4,LONG,'E'/256
1976  OB43 4C53 A      .WORD  'LS','E'+EVEN,IF-3
    OB44 C520 A
    OB45 0B37 A
1977  OB46 0342 A      ELSE:  .WORD  DOCOL,TWO,QPAIRS,COMPIL
    OB47 037E A
    OB48 04FB A
    OB49 0521 A
1978  OB4A 011B A      .WORD  BRAN,HERE,ZERO,COMMA
    OB4B 043A A
    OB4C 0376 A
    OB4D 0448 A
1979  OB4E 02D5 A      .WORD  SWAP,TWO,ENDIF,TWO,SEMIS
    OB4F 037E A
    OB50 0ADC A
    OB51 037E A
    OB52 026A A
1980  ;
1981  OB53 C557 A      HEAD    IMM,5,LONG,'W'/256
1982  OB54 4849 A      .WORD  'HI','LE'+ODD,ELSE-4
    OB55 4CC5 A
    OB56 0B42 A
1983  OB57 0342 A      WHILE: .WORD  DOCOL,IF,TWOP,SEMIS
    OB58 0B3A A
    OB59 0432 A
    OB5A 026A A
1984  ;
1985  ;*****
1986  ;*          NUMERIC PRIMITIVES          *
1987  ;*****
1988  ;
1989  OB5B 8653 A      HEAD    ORD,6,LONG,'S'/256
1990  OB5C 5041 A      .WORD  'PA','CE','S'+EVEN,WHILE-4
    OB5D 4345 A
    OB5E D320 A
    OB5F 0B53 A
1991  OB60 0342 A      SPACES: .WORD  DOCOL,ZERO,MAX,DDUP,ZBRAN
    OB61 0376 A
    OB62 08D7 A
    OB63 047D A
    OB64 0124 A
1992  OB65 0006 A      .WORD  SPACE2-.,ZERO,XDO
    OB66 0376 A
    OB67 0155 A
1993  OB68 0475 A      SPACE1: .WORD  SPACE,XLOOP
    OB69 012F A
1994  OB6A FFFE A      .WORD  SPACE1-.

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1995 0B6B 026A A SPACE2: .WORD SEMIS
1996 ;
1997 ; : <, PAD BYTE HLD ! ;
1998 ;
1999 0B6C 823C A HEAD ORD,2,LONG,'<'/256
2000 0B6D A320 A .WORD ','+EVEN,SPACES-5
      0B6E 0B5B A
2001 0B6F 0342 A BDIGS: .WORD DOCOL,PAD,BYTE,HLD,STORE,SEMIS
      0B70 0686 A
      0B71 02FD A
      0B72 0426 A
      0B73 031D A
      0B74 026A A
2002 ;
2003 ; : ,> DROP DROP HLD @
2004 ; PAD BYTE OVER + ;
2005 ;
2006 0B75 8223 A HEAD ORD,2,LONG,', '/256
2007 0B76 BE20 A .WORD '>'+EVEN,BDIGS-3
      0B77 0B6C A
2008 0B78 0342 A EDIGS: .WORD DOCOL,DROP,DROP,HLD,AT
      0B79 02D0 A
      0B7A 02D0 A
      0B7B 0426 A
      0B7C 030B A
2009 0B7D 0686 A .WORD PAD,BYTE,OVER,SUB,SEMIS
      0B7E 02FD A
      0B7F 02C9 A
      0B80 0450 A
      0B81 026A A
2010 ;
2011 0B82 8453 A HEAD ORD,4,LONG,'S'/256
2012 0B83 4947 A .WORD 'IG','N'+EVEN,EDIGS-3
      0B84 CE20 A
      0B85 0B75 A
2013 0B86 0342 A SIGN: .WORD DOCOL,ROT,ZLESS,ZBRAN
      0B87 046A A
      0B88 0297 A
      0B89 0124 A
2014 0B8A 0004 A .WORD SIGN1-.,LIT,'-'/256,HOLD
      0B8B 0103 A
      0B8C 002D A
      0B8D 067A A
2015 0B8E 026A A SIGN1: .WORD SEMIS
2016 ;
2017 0B8F 81A3 A HEAD ORD,1,SHORT,', '/256
2018 0B90 0B82 A .WORD SIGN-4
2019 0B91 0342 A DIG: .WORD DOCOL,BASE,AT,MSMOD,ROT
      0B92 040D A
      0B93 030B A
      0B94 0933 A
      0B95 046A A
2020 0B96 0103 A .WORD LIT,9,OVER,LESS,ZBRAN
      0B97 0009 A
      0B98 02C9 A

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    OB99 045D A
    OB9A 0124 A
2021  OB9B 0004 A      .WORD  DIG1-. ,LIT,7,PLUS
    OB9C 0103 A
    OB9D 0007 A
    OB9E 029F A
2022  OB9F 0103 A      DIG1:  .WORD  LIT,0030,PLUS,HOLD,SEMIS
    OBA0 0030 A
    OBA1 029F A
    OBA2 067A A
    OBA3 026A A
2023  ;
2024  OBA4 8223 A      HEAD   ORD,2,LONG,' '/256
2025  OBA5 D320 A      .WORD  'S'+EVEN,DIG-2
    OBA6 0B8F A
2026  OBA7 0342 A      DIGS:  .WORD  DOCOL
2027  OBA8 0B91 A      DIGS1: .WORD  DIG,OVER,OVER,OR,ZEQU,ZBRAN
    OBA9 02C9 A
    OBAA 02C9 A
    OBAB 0246 A
    OBAC 028F A
    OBAD 0124 A
2028  OBAE FFFA A      .WORD  DIGS1-. ,SEMIS
    OBAF 026A A
2029  ;
2030  ;*****
2031  ;*                OUTPUT OPERATORS                *
2032  ;*****
2033  ;
2034  OBB0 8344 A      HEAD   ORD,3,LONG,'D'/256
2035  OBB1 2ED2 A      .WORD  '.R'+ODD,DIGS-3
    OBB2 0BA4 A
2036  OBB3 0342 A      DDOTR: .WORD  DOCOL,TOR,SWAP,OVER,DABS
    OBB4 027B A
    OBB5 02D5 A
    OBB6 02C9 A
    OBB7 08C8 A
2037  OBB8 0B6F A      .WORD  BDIGS,DIGS,SIGN,EDIGS,FROMR
    OBB9 0BA7 A
    OBBA 0B86 A
    OBBC 0B78 A
    OBBD 0283 A
2038  OBBD 02C9 A      .WORD  OVER,SUB,SPACES,TYPE,SEMIS
    OBBE 0450 A
    OBBF 0B60 A
    OBC0 0599 A
    OBC1 026A A
2039  ;
2040  OBC2 822E A      HEAD   ORD,2,LONG,'.'/256
2041  OBC3 D220 A      .WORD  'R'+EVEN,DDOTR-3
    OBC4 0BB0 A
2042  OBC5 0342 A      DOTR:  .WORD  DOCOL,TOR,STOD,FROMR,DDOTR,SEMIS
    OBC6 027B A
    OBC7 08A5 A
    OBC8 0283 A

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    OBC9 OBB3 A
    OBCA 026A A
2043      ;
2044 OBCB 8244 A      HEAD      ORD,2,LONG,'D'/256
2045 OBCC AE20 A      .WORD      '.'+EVEN,DOTR-3
    OBCD OBC2 A
2046 OBCE 0342 A      DDOT:     .WORD      DOCOL,ZERO,DDOTR,SPACE,SEMIS
    OBCF 0376 A
    OBD0 OBB3 A
    OBD1 0475 A
    OBD2 026A A
2047      ;
2048 OBD3 81AE A      HEAD      ORD,1,SHORT,'.'/256
2049 OBD4 OBCB A      .WORD      DDOT-3
2050 OBD5 0342 A      DOT:      .WORD      DOCOL,STOD,DDOT,SEMIS
    OBD6 08A5 A
    OBD7 OBCE A
    OBD8 026A A
2051      ;
2052 OBD9 81BF A      HEAD      ORD,1,SHORT,'?'/256
2053 OBDA OBD3 A      .WORD      DOT-2
2054 OBDB 0342 A      QUES:     .WORD      DOCOL,AT,DOT,SEMIS
    OBDC 030B A
    OBDD OBD5 A
    OBDE 026A A
2055      ;
2056 OBDF 8255 A      HEAD      ORD,2,LONG,'U'/256
2057 OBE0 AE20 A      .WORD      '.'+EVEN,QUES-2
    OBE1 OBD9 A
2058 OBE2 0342 A      UDOT:     .WORD      DOCOL,ZERO,DDOT,SEMIS
    OBE3 0376 A
    OBE4 OBCE A
    OBE5 026A A
2059      ;
2060      ;*****
2061      ;*          PROGRAM DOCUMENTATION          *
2062      ;*****
2063      ;
2064 OBE6 844C A      HEAD      ORD,4,LONG,'L'/256
2065 OBE7 4953 A      .WORD      'IS','T'+EVEN,UDOT-3
    OBE8 D420 A
    OBE9 OBDF A
2066 OBEA 0342 A      LIST:     .WORD      DOCOL,CR,DUP,SCR,STORE,PDOTQ
    OBEB 01FC A
    OBEC 02DD A
    OBED 03EC A
    OBEE 031D A
    OBEF 05CA A
2067 OBF0 0653 A      STRING    6,'S'/256
2068 OBF1 4352 A      .ASCII    'CR','
    OBF2 2023 A
    OBF3 2020 A
2069 OBF4 0BD5 A      .WORD      DOT,LIT,16,ZERO,XDO
    OBF5 0103 A
    OBF6 0010 A

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	OBF7	0376	A			
	OBF8	0155	A			
2070	OBF9	01FC	A	LIST1:	.WORD	CR,I,ZERO,THREE,DDOTR,SPACE
	OBFA	0161	A			
	OBFB	0376	A			
	OBFC	0382	A			
	OBFD	0BB3	A			
	OBFE	0475	A			
2071	OBFF	0161	A		.WORD	I,SCR,AT,DLINE,XLOOP
	OC00	03EC	A			
	OC01	030B	A			
	OC02	09FB	A			
	OC03	012F	A			
2072	OC04	FFF5	A		.WORD	LIST1-.,CR,SEMIS
	OC05	01FC	A			
	OC06	026A	A			
2073						
2074	OC07	8549	A		HEAD	ORD,5,LONG,'I'/256
2075	OC08	4E44	A		.WORD	'ND','EX'+ODD,LIST-4
	OC09	45D8	A			
	OC0A	0BE6	A			
2076	OC0B	0342	A	INDEX:	.WORD	DOCOL,LIT,000C,EMIT
	OC0C	0103	A			
	OC0D	000C	A			
	OC0E	01ED	A			
2077	OC0F	01FC	A		.WORD	CR,ONEP,SWAP,XDO
	OC10	042B	A			
	OC11	02D5	A			
	OC12	0155	A			
2078	OC13	01FC	A	INDEX1:	.WORD	CR,I,ZERO,THREE,DDOTR,SPACE
	OC14	0161	A			
	OC15	0376	A			
	OC16	0382	A			
	OC17	0BB3	A			
	OC18	0475	A			
2079	OC19	0376	A		.WORD	ZERO,I,DLINE,QTERM,ZBRAN
	OC1A	0161	A			
	OC1B	09FB	A			
	OC1C	01F8	A			
	OC1D	0124	A			
2080	OC1E	0002	A		.WORD	INDEX2-.,LEAVE
	OC1F	0273	A			
2081	OC20	012F	A	INDEX2:	.WORD	XLOOP
2082	OC21	FFF2	A		.WORD	INDEX1-.,SEMIS
	OC22	026A	A			
2083						
2084	OC23	8554	A		HEAD	ORD,5,LONG,'T'/256
2085	OC24	5249	A		.WORD	'RI','AD'+QDD,INDEX-4
	OC25	41C4	A			
	OC26	0C07	A			
2086	OC27	0342	A	TRIAD:	.WORD	DOCOL,LIT,000C,EMIT,THREE
	OC28	0103	A			
	OC29	000C	A			
	OC2A	01ED	A			
	OC2B	0382	A			

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2087 0C2C 0911 A      .WORD  SLASH,THREE,STAR,THREE
      0C2D 0382 A
      0C2E 0901 A
      0C2F 0382 A
2088 0C30 02C9 A      .WORD  OVER,PLUS,SWAP,XDO
      0C31 029F A
      0C32 02D5 A
      0C33 0155 A
2089 0C34 01FC A      TRIAD1: .WORD  CR,I,LIST,XLOOP
      0C35 0161 A
      0C36 0BEA A
      0C37 012F A
2090 0C38 FFFC A      .WORD  TRIAD1-. ,CR,LIT,000F
      0C39 01FC A
      0C3A 0103 A
      0C3B 000F A
2091 0C3C 0A05 A      .WORD  MESS,CR,SEMIS
      0C3D 01FC A
      0C3E 026A A
2092
2093      ;
2094      ;*****
2095      ;*                                TOOLS                                *
2096      ;*****
2097 0C3F 8556 A      HEAD   ORD,5,LONG,'V'/256
2098 0C40 4C49 A      .WORD  'LI','ST'+ODD,TRIAD-4
      0C41 53D4 A
      0C42 0C23 A
2099 0C43 0342 A      VLIST: .WORD  DOCOL,LIT,0080,OUT,STORE
      0C44 0103 A
      0C45 0080 A
      0C46 03E7 A
      0C47 031D A
2100 0C48 03FA A      .WORD  CONT,AT,AT
      0C49 030B A
      0C4A 030B A
2101 0C4B 03E7 A      VLIST1: .WORD  OUT,AT,LIT,0040,GREAT,ZBRAN
      0C4C 030B A
      0C4D 0103 A
      0C4E 0040 A
      0C4F 0463 A
      0C50 0124 A
2102 0C51 0005 A      .WORD  VLIST2-. ,CR,ZERO,OUT,STORE
      0C52 01FC A
      0C53 0376 A
      0C54 03E7 A
      0C55 031D A
2103 0C56 02DD A      VLIST2: .WORD  DUP,IDDOT,SPACE,SPACE
      0C57 075D A
      0C58 0475 A
      0C59 0475 A
2104 0C5A 04C0 A      .WORD  PFA,LFA,AT,DUP,ZEQU
      0C5B 04A3 A
      0C5C 030B A
      0C5D 02DD A
  
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2105 0C5E 028F A  
0C5F 01F8 A .WORD QTERM,OR,ZBRAN  
0C60 0246 A  
0C61 0124 A  
2106 0C62 FFE9 A .WORD VLIST1-.,DROP,SEMIS  
0C63 02D0 A  
0C64 026A A  
2107 ;  
2108 0C65 8454 A HEAD ORD,4,LONG,'T'/256  
2109 0C66 4153 A .WORD 'AS','K'+EVEN,VLIST-4  
0C67 CB20 A  
0C68 0C3F A  
2110 0C69 0342 A TASK: .WORD DOCOL,SEMIS  
0C6A 026A A  
2111

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2112 .PAGE  
2113 088C ; FIN: .END CENT

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00F6 02A2 A  
00F7 0108 A  
00F8 0109 A  
00F9 0107 A  
00FA 015D A  
00FB 015C A  
00FC 7E44 A  
00FD 7E3B A  
00FE 7ECC A

ABORT	0874	A	ABS	08C0	A	AGAIN	0B21	A
ALLOT	0442	A	AND	023F	A	ARROW	0A3B	A
AT	030B	A	BACK	0ACA	A	BACKSP	0017	A*
BAD	0175	A	BASE	040D	A	BBUF	0399	A
BCOMP	07AF	A	BDIGS	0B6F	A	BEGIN	0AD3	A
BIN	02A2	A	BITO	0003	A	BL	0387	A
BLANKS	0671	A	BLK	03DD	A	BLKSIZ	0080	A
BLOCK	09B6	A	BLOCK1	09C5	A	BLOCK2	09D2	A
BLOCK3	09DE	A	BRAN	011B	A	BSCR	039F	A
BUFF1	0997	A	BUFF2	09AA	A	BUFFER	0992	A
BUFFS	1DF0	A	BUFMEM	0210	A	BUILDS	0575	A
BYTE	02FD	A	CAT	0311	A	CELL	0305	A
CENT	088C	A	CFA	04AA	A	CKBASE	016F	A
CMOVE	0690	A	CMOVE1	0698	A	CMOVE2	06A1	A
CMOVE3	06A2	A	COLD	088B	A	COLON	0338	A
COMMA	0448	A	COMPIL	0521	A	CON	0357	A
CONT	03FA	A	COUNT	058E	A	CPU	0014	A*
CR	01FC	A	CREAT1	078C	A	CREATE	0779	A
CRY	0007	A	CSET	000A	A	CSP	041C	A
CSTORE	0324	A	CURR	0401	A	CYCLE	018A	A
DABS	08C8	A	DDOT	0BCE	A	DDOTR	0BB3	A
DDUP	047D	A	DEC	0553	A	DEFIN	084B	A
DELIM	01DA	A	DFIND	0727	A	DFIND1	0737	A
DICT	0100	A	DIG	0B91	A	DIG1	0B9F	A
DIGIT	0166	A	DIGS	0BA7	A	DIGS1	0BA8	A
DLINE	09FB	A	DLITE1	07D4	A	DLITER	07CC	A
DMINUS	02BD	A	DO	0AF0	A	DOCOL	0342	A
DOCON	035C	A	DODOES	0583	A	DOES	057D	A
DOT	0BD5	A	DOTQ	05D8	A	DOTQ1	05EA	A
DOTQ2	05EE	A	DOTR	0BC5	A	DOUSER	0371	A
DOVAR	0367	A	DOVOC	0837	A	DP	03D0	A
DPO	001F	A*	DPL	0412	A	DPLUS	02A7	A
DPMI	08B7	A	DPMI1	08BC	A	DRONE	097F	A
DROP	02D0	A	DRTWO	0987	A	DTRAI	05B4	A
DTRA2	05C1	A	DTRA3	05C3	A	DTRAIL	05B0	A
DUP	02DD	A	EDIGS	0B78	A	ELSE	0B46	A
EMIT	01ED	A	ENCL	01B1	A	END	0B1A	A
ENDIF	0ADC	A	ENDNAM	01A1	A	EQUAL	0457	A
ERASE	0668	A	ERROR	0744	A	ERROR1	074B	A



PACE ASSEMBLER REV-A 05/23/75  
 FORTH NUCLEUS FOR PACE

EVEN	8000	A	EXEC	0112	A	EXPEC1	05F9	A
EXPEC2	0611	A	EXPEC3	061D	A	EXPEC4	061E	A
EXPEC5	0624	A	EXPECT	05F4	A	FENCE	03CB	A
FENCE0	001E	A*	FILL	0658	A	FIN	0C6B	A
FIRST	038D	A	FLD	0417	A	FORG1	0AA1	A
FORG2	0AAE	A	FORG3	0AB1	A	FORGET	0A8C	A
FORTH	083F	A	FORTH0	0016	A*	FOUND	0194	A
FROMR	0283	A	GETC	7E3B	A	GREAT	0463	A
HEAD	FORM		HERE	043A	A	HEX	0548	A
HI	0A59	A	HIBLK	3FC0	A	HLD	0426	A
HOLD	067A	A	I	0161	A	IDDOT	075D	A
IF	0B3A	A	IMM	0001	A	IMMED	0819	A
IN	03E2	A	INDEX	0C0B	A	INDEX1	0C13	A
INDEX2	0C20	A	INIT	0023	A	INTER	07F1	A
INTER1	07F2	A	INTER2	07FE	A	INTER3	0800	A
INTER4	0803	A	INTER5	080D	A	INTER6	080F	A
INTER7	0810	A	INTEST	7ECC	A	IP	0001	A
IPO	089F	A	KEY	01F1	A	LATEST	049B	A
LBRAC	052C	A	LDUP	0894	A	LDUVS	0896	A
LEAVE	0273	A	LESS	045D	A	LFA	04A3	A
LIMIT	0393	A	LINK	0008	A	LIST	0BEA	A
LIST1	0BF9	A	LIT	0103	A	LITER	07BD	A
LITER1	07C5	A	LMASK	01E7	A	LNDEL	01CB	A
LO	0A5E	A	LOAD	0A22	A	LOBLK	2000	A
LONG	0000	A	LOOP	0AFA	A	LP	0219	A
M	000B	A	MAX	08D7	A	MESS	0A05	A
MESS1	0A15	A	MESS2	0A17	A	MESS3	0A1D	A
MIN	08CF	A	MIN1	023B	A	MINUS	02B4	A
MINUS1	0223	A	MISS	019C	A	MOD	0919	A
MOVE	0201	A	MOVE1	0207	A	MOVE2	020E	A
MSLASH	08EE	A	MSMOD	0933	A	MSTAR	08DF	A
MTBUF	0975	A	NBUF	0008	A	NEW1	01BE	A
NEW2	01CD	A	NEWNAM	0181	A	NEXT	0109	A
NFA	04B1	A	NINE	0177	A	NONUL	01D6	A
NUL	01D1	A	NULL	063A	A	NULL1	064F	A
NULL2	0651	A	NULL3	0653	A	NUMB	06FA	A
NUMB1	070A	A	NUMB2	071D	A	NUMB3	0722	A
NZ	0005	A	ODD	0080	A	OFFSET	03F3	A
ONE	037A	A	ONEP	042B	A	OR	0246	A
ORD	0000	A	ORGPTR	08A0	A	ORIG	0010	A
OUT	03E7	A	OVER	02C9	A	P	0002	A
PABORT	073D	A	PAD	0686	A	PAREN	0853	A
PART	0002	A	PBUF	094D	A	PBUF1	0958	A
PCR	0A53	A	PDOTQ	05CA	A	PEMIT	0A49	A
PFA	04C0	A	PFIND	017D	A	PKEY	0A4D	A
PLINE	09E7	A	PLOOP	0B05	A	PLUS	029F	A
PMI	08AE	A	PMI1	08B3	A	PNUMB	06D4	A
PNUMB1	06D5	A	PNUMB2	06F0	A	PNUMB3	06F3	A
POOL	0230	A	POP	015D	A	POP2	015C	A
PORIG	03A6	A	PQTERM	0A4F	A	PREV	0947	A
PSCODE	055E	A	PSTORE	02E3	A	PULL	014F	A
PUSH	0107	A	PUT	0108	A	PUTC	7E44	A
QCOMP	04E3	A	QCSP	0505	A	QERR1	04DD	A
QERR2	04DE	A	QERROR	04D6	A	QEXEC	04EF	A
QLOAD	0514	A	QPAIRS	04FB	A	QSTACK	07DA	A

PACE ASSEMBLER REV-A 05/23/75  
 FORTH NUCLEUS FOR PACE

QTERM	01F8	A	QUAD	0000	A	QUERY	062D	A
QUES	0BDB	A	QUIT	085C	A	QUIT1	0861	A
QUIT2	086D	A	R	0289	A	RO	001A	A*
RBRAC	0533	A	REPEAT	0B2D	A	REV	0015	A*
RMASK	01E8	A	RNDEL	01CA	A	RNUM	0421	A
ROT	046A	A	RP	0021	A	RPSTOR	0262	A
RT1	01C4	A	RT2	01DD	A	RW	0A63	A
RW1	0A79	A	RZERO	03B3	A	S0	0019	A*
SCR	03EC	A	SCSP	04CC	A	SEMI	034A	A
SEMIC	0569	A	SEMIS	026A	A	SHORT	0001	A
SIGN	0B86	A	SIGN1	0B8E	A	SLASH	0911	A
SLMOD	0909	A	SMUDGE	053E	A	SP	0003	A
SPACE	0475	A	SPACE1	0B68	A	SPACE2	0B6B	A
SPACES	0B60	A	SPAT	0255	A	SPSTOR	025B	A
SSLASH	092A	A	SSMOD	0921	A	STAR	0901	A
START	089E	A	STATE	0407	A	STOD	08A5	A
STORE	031D	A	STRING	FORM		SUB	0450	A
SWAP	02D5	A	SZERO	03AE	A	TASK	0C69	A
TEST	021E	A	THEN	0AEA	A	THREE	0382	A
TIB	03B8	A	TIBO	001B	A*	TICK	0A7F	A
TOGGLE	02ED	A	TOPMEM	2000	A	TOR	027B	A
TRAV	0488	A	TRAV1	048A	A	TRIAD	0C27	A
TRIAD1	0C34	A	TWO	037E	A	TWOP	0432	A
TYPE	0599	A	TYPE1	05A1	A	TYPE2	05A8	A
TYPE3	05A9	A	UO	0018	A*	UDOT	0BE2	A
UNTIL	0B10	A	UP	0022	A	UPDATE	0962	A
USE	0941	A	USER	036E	A	USLASH	0227	A
USTAR	0213	A	UVARs	1DD0	A	VAR	0364	A
VLIST	0C43	A	VLIST1	0C4B	A	VLIST2	0C56	A
VOCAB	0827	A	VOCL	03D8	A	VOCLO	0020	A*
W	0002	A	WARN	03C5	A	WARNO	001D	A*
WENT	0892	A	WHILE	0B57	A	WIDTH	03BE	A
WIDTH0	001C	A*	WORD	06A8	A	WORD1	06B2	A
WORD2	06B4	A	X	0002	A	X00FF	0335	A
X3FFF	01A8	A	X7F7F	01A9	A	X8080	01AB	A
XDO	0155	A	XFF	031A	A	XFF00	01AA	A
XLOOP	012F	A	XLOOP1	0137	A	XOR	024D	A
XPLOOP	0140	A	Y	0003	A	Z	0001	A
ZBRAN	0124	A	ZEQU	028F	A	ZERO	0376	A
ZLESS	0297	A						

NO ERROR LINES

SOURCE CHECKSUM : E77A

A            ZEQU        028F    A            ZERO        0376    A