

PROG

DO

READ

FOR LISP 97

Also P86 P140  
P144



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PA31 0      $LN=0==RRH *NEXT PROG STATEMENT
PA41 $LN = **RRH = TAG TO GO TO
0      $LN=1,RRH=PTR TO PROG LESS BOUND VAR LIST
$LN=*,RRH RETURN VALUE
$2,1==DONT DO UNBND

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PROG11 HLRZ TT,(A)
HRRZ A,(A)
JSP T,PG2
JUMPE TT,PG7B
MOVSI C,1
MOVEI B,VALUE
MOVEM SP,SPSV
ANDCAM C,PA4

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PG7A1 HLRZ A,(TT)
MOVEI ARI,0
PUSHJ P,BIND
HRRZ TT,(TT)
JUMPN TT,PG7A
PUSH SP,SPSV

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PG7B1 SFX
PUSHJ P,PG0
JRST ,+2
IDEA A,A MOVEI A,0
HRRZ A
MOVSI B,1
TDNN B,PA4
PUSHJ P,UNBND
ERRP41 POP P,PA4
PCP P,PA3
PCPJ P,

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PG01 SKIPA T,PA3      $SEQUENCER FOR PROGS
PG5A1 MOVE T,A
PG11 JUMPE T,GSX1     $NORMAL EXIT SKIPS
HLRZ A,(T)
HRRZ T,(T)
HLLE B,(A)
AQJE B,PG1
MOVEM T,PA3
PUSHJ P,EVAL
SKIPL A,PA4
JRST CPOPJ           $RETURN EXIT
PG1A1 SKIPL T,PA3
JRST PG1
PG51 JUMPE A,EG1
PG5B1 HLRZ TT,(A)
HRRZ A,(A)
CAIN TT,(T)
JRST PG5A            $FOUND TAG
JRST PG5

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GO11 HLRZ A,(A)
HRRZ A,PA3
HLLE B,(A)
AQJE B,FALSE
PUSHJ P,EVAL
JRST GO1

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RETURN11 TLO A,T
MOVEM A,DO4
HLL A,PA4
TLZ A,-2
MOVEM A,PA4
PCPJ P,

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SETQ11 HLRZ B,(A)
PUSH P,B
PUSHJ P,CADR
PUSHJ P,EVAL
MOVE B,A
POP P,A

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SET11 MOVE ARI,B
PUSHJ P,BIND
SUB SP,(11),1
SFX
MOVE A,ARI
PCPJ P,

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PG21 PUSH P,PA3
PUSH P,PA4
HRRZ A,PA4
MOVEM A,PA3
JRST (T)

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DO1:  MOVEM A,AR1
      PUSHJ P,CDDDDR
      JSP T,PG2
      HRRZ C,(AR1)
      HLRZ A,(AR1)
      PUSH P,A          ;INDEX VARIABLE
      PUSHJ P,ATOM
      SKIPN A
      LERR [SIXBIT /INDEX NON-ATOMIC - DO1/1]
      HLRZ A,(C)
      HRRZ C,(C)
      HLRZ B,(C)
      PUSH P,B          ;INCREMENT EXPRESSION
      HRRZ C,(C)
      HLRZ B,(C)
      PUSH P,B          ;END-TEST EXPRESSION
      PUSHJ P,EVAL
      MOVE AR1,A
      MOVEM SP,SPSV
      MOVE A,-2(P)
      PUSHJ P,BIND      ;SETQ INITIAL INDEX VALUE
      PUSH SP,SPSV
      SFX
      MOVEM A,-2(P)
DOLOOP: MOVE A,(P)
        PUSHJ P,EVAL
        SKIPN A
        SKIPA A,-2(P)
        PUSHJ P,PG0
        JRST DO1
DO2:  MOVE A,-1(P)
      PUSHJ P,EVAL
      HRRZM A,-2(P) ;INCREMENT INDEX AND LOOP
      JRST DOLOOP
DO1:  SUB P,[3,,3]
      JRST PG4

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Move A, PA4  
 Move A, PA3

# #HAIRY READER

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OREAD: JSP TT,ORD
READ:  MOVEI A,TYI
READ0: MOVEI T,RINTERN
READ0: HRRM A,READ2
      HRRM T,RDSP20
      MOVE T,VIBASE
      SUBI T,1
      MOVEM T,RDIBS
      HRRI T,RDOBJ
      SKIPE RDMOD
      HRRI T,RDQTE
      HRRM T,READ2A
READ0A: HRLZI T,2200
      JRST,+.2
READ1:  HRLZI T,2000
READ2:  PUSHJ P,.
READ2A: PUSHJ P,.          ;RDOBJ OR RDQTE
      CAIE B,40
      CAIN B,1
      JRST,RDSPA
      CAIN B,1
      JRST,RDOPN
      CAIN B,1
      JRST,RDCLOS
      CAIN B,1
      JRST,RDDOT
      JUMPE B,READ2      ;NULL CHARACTER READ
RDDEL:  TLNE T,200
      JRST,READ0A
      TLNN T,2000
      JRST,RDEL1
      POP P,T
      POP P,T
      JRST,RUBOUT
RDDEL1: POP P,AR1
      MOVE A,AR1
RDDEL3: HRRZ B,(A)
      CAMN B,AR1
      JRST,RDEL2
      MOVE A,B
      JRST,RDEL3
RDDEL2: CAMN A,AR1
      JRST,READ1
      HRRZ B,(AR1)
      HRRM B,(A)
      PUSH P,A
      MOVEI T,0
      JRST,READ2

```

#RDOBJ OR RDQTE

#NULL CHARACTER READ  
 #DELETE CHARACTER READ



RDSPA: TLNE T,200  
 POPJ P,  
 JSP C,RDSPA3  
 JRST,READ2  
 RDSPA3: PUSHJ P,NCONS  
 TLNN T,2000  
 JRST .+3  
 HRRM A,(A)  
 JRST RDSPA2  
 POP P,AR1  
 HRRZ B,(AR1)  
 HRRM B,(A)  
 HRRM A,(AR1)  
 RDSPA2: PUSH P,A  
 MOVEI T,0  
 JRST,(C)

RDDPN: TLNE T,200  
 JRST,ER1  
 JSP C,RDSPA3  
 RDPA1: HRRZI A,50  
 JRST,READ2+1

#FIRST OBJECT ON INPUT LIST ILLEGAL

RDDOT: TLNE T,100  
 JRST ER2  
 JSP C,RDSPA3  
 HRLZI T,100  
 JRST,READ2

RDCLOS: TLNE T,200  
 JRST,READDA  
 TLNN T,100  
 PUSHJ P,NCONS  
 TLNE T,2000  
 POPJ P,  
 POP P,AR1  
 HRRZ B,(AR1)  
 HRRM A,(AR1)  
 JRST SPROG2

RDQTE: CAIE A,"'  
 JRST RDOBJ  
 PUSHJ P,\*READ2  
 PUSHJ P,RDOBJ  
 JUMPE B,-2  
 PUSH P,B  
 PUSHJ P,NCONS  
 MOVEI B,CQUOTE  
 PUSHJ P,XCONS  
 JRST POPBJ

# #FLAGS

#1 FLOATING NUMBER  
 #2 DECIMAL NUMBER  
 #4 E, I, OR + TYPED ON A NUMBER  
 #10 DOT  
 #20 LET  
 #40 NUM  
 #100 DOT PAIR  
 #200 TOP LEVEL  
 #400 MINUS  
 #1000 -E  
 #2000 1ST OBJECT  
 #4000 I OR + TYPED ON A NUMBER  
 #10000 - TYPED ON A NUMBER  
 #20000 READ INITIAL + OR -



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RDOB1: CLEARB B,C      #READ-ONE-OBJECT SUBROUTINE
JRST RDCH1
RDCH:  PUSHJ P,#READ2
RDCH1: CAIG A,#Z
        CAIGE A,#A
        JRST,RDOB1
RDLET:  PUSHJ P,RDCHL   #PROCESS A LETTER
        JRST RDCH

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RDOB1:  CAIG A,#9
        CAIGE A,#0
        JRST,RDOB2
RDNUM:  TLNE T,20
        JRST,RDLET
        SUBI A,#0
        TLNE T,4
        JRST,RDEXP
        TLO T,40
        TLZN T,12
        JRST,RDNUM1
        TLO T,1
        MOVEI TT,0
RDNUM1: IMULI B,12
        ADD B,A
        PUSH P,C+1
        MUL C,RDIBS
        LSH C+1,1
        LSHC C,35
        POP P,C+1
        ADD C,A
        SOJA TT,RDCH
RDEXP:  TLNE T,4000
        IMUL B,RDIBS
        IMULI C,12
        TLNE T,4000
        ADD B,A
        ADD C,A
        JRST,RDCH
RDOB2:  CAIN A,#11
        MOVEI A,#
        CAIE A,40
        CAIN A,#
        JRST,RDSP
        CAIE A,#1
        JRST,RDOB3
RDOP:   TLNE T,60
        JRST,RDSP1
        TLZE T,10
        TLO T,100
        PUSH P,T
        PUSHJ P,READ1
        MOVEI B,#
        POP P,T
        JRST,RDSPS+1

```

*Handwritten notes:*  
 → TLO T, 40  
 → TLO T, 1000  
 → TLO T, 40

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RDOB3:  CAIE A,#)
        JRST,RDOB4
RDCL:   TLNE T,60
        JRST,RDSP1
        TLO T,100
        MOVEI B,#)
        JRST FALSE
RDOB4:  CAIE A,#.
        JRST,RDOB5
RDDT:   TLNE T,40
        JRST,RDDT1
        TLNE T,20
        JRST,RDDT2
        TLOE T,10
        TLO T,100
        JRST,RDCH
RDDT1:  TLON T,2
        TDZA TT,TT
        TLOA T,10
        JRST RDCH
        JRST RDSP1
RDDT2:  TLNE T,200
        JRST,ER2
        JRST,RDSP1
RDOB5:  CAIN A,#+
        JRST .+3
        CAIE A,#-
        JRST RDOB7
        TLNE T,20
        JRST RDCHL
        TLNE T,4
        JRST RDOB6
        TLNE T,40
        JRST ER1
        CAIE A,#-
        TLO T,400
        TLO T,2000
        PUSHJ P,RDNEW
        JRST RDCH
RDOB6:  CAIN A,#-
        TLO T,1000
        JRST RDCH

```

*Handwritten notes:*  
 → N  
 → 00

#CONTEXT ERROR WITH DOT NOTATION



R00BJ7: CAIE A,177  
JRST,R00BJ8  
R00BJ8: TLZE T,38877  
JRST,R00BJ9  
MOVE B,A  
POPJ P,  
R00BJ9: PUSHJ P,#READ2  
JRST,R00BJ8

#STRIPPED RUBOUT

R00BJ8: CAIE A,1/  
JRST,R00BJ9  
PUSHJ P,#READ2  
R0ALPH: TLZE T,40  
JRST ER1  
JRST,R0CHL

R0LET

R00BJ9: CAIL A,11  
TLNN T,40  
JRST R00BJ0  
TLO T,4004  
TLZN T,2  
MOVE B,C  
MOVEM B,R0BSV  
CLEARB B,C  
CAIE A,11  
TLO T,10000  
JRST R0CH

R00BJ0: CAIE A,33  
CAIL A,40  
JRST R0ALPH  
TLNE T,35467  
JRST R0CH  
R0NUL: SETZM B  
POPJ P,

R0CHL: TLNE T,20040 #LETTER PROCESSING SUBROUTINE  
JRST,R0CHLE  
TLOE T,20  
JRST R0PAK  
R0NEW: TLZE T,10 #FIX-UP T-CONDITION WHEN SECOND PART  
TLOA T,100 #OF DOT PAIR BEGINS TO COME IN  
JRST .+3  
TLNE T,2000  
JRST ER1  
HRRM A,R0RLD1  
PUSHJ P,FWOCNS  
HRLI A,700  
MOVEM A,RDPTR  
PUSHJ P,NCONS  
HRRM A,(A)  
JRST,R0RLD2

R0RLD: HRRM A,R0RLD1  
HRRZ B,(AR1)  
PUSHJ P,FWOCNS  
HRRM A,RDPTR  
PUSHJ P,CONS  
HRRM A,(AR1)

R0RLD2: SOS,RDPTR  
MOVE AR1,A

R0RLD1: MOVEI A,  
SKIPB B,(S)

R0PAK: SOJLE B,R0RLD  
DPBI A,RDPTR  
POPJ P,

RDPTR: 0

R0CHLE: TLNN T,3  
JRST R0LTE1  
CAIE A,105  
JRST,ER1  
TLON T,5  
MOVEI TT,0  
MOVEI C,0  
POPJ P,  
R0LTE1: TLNN T,20000  
JRST ER1  
SKIPN R0MOD  
JRST R0LTE2

R0LTE1: CAIL A,1A  
SUBI A,A-10,-10  
CLEARB B,C  
SUB P,(1,-1)  
JRST R0NUL

R0LTE2: TLNE T,400  
JRST,ER1  
JRST,R0CHL

R0LTE1: TLNN T,90  
TLO T,20  
TLZE T,20000  
JRST R0PAK

CAIE A,1A  
CAIE A,1A  
JRST R0LTE3

R0CHL



RDSP1: TLZE T,10  
 JRST,RDSP2  
 RDSP1: HRRM A,RDSPS  
 TLNN T,20  
 JRST,RDSP3  
 HRRZ A,(AR1)  
 HLRM A,(AR1)  
 PUSH P,T  
 RDSP20: PUSHJ P,.  
 POP P,T  
 RDSPS: HRRZI B,0  
 TLNE T,100  
 JRST,RDSP8  
 POPJ P,  
  
 RDSP3: TLNN T,40  
 JRST,RDNUL  
 TLNE T,1  
 JRST,RDSP4  
 TLNE T,4000  
 JRST RDSP51  
 TLNE T,2  
 MOVE C,B  
 MOVE A,C  
 RDSP31: MOVEI B,FXNUM  
 RDSP5: TLNE T,400  
 MOVNS,A  
 PUSHJ P,MAKNUM  
 JRST,RDSPS  
 RDSP51: TLNN T,2  
 MOVE C,B  
 MOVE A,RDBSV  
 ANDI C,77  
 TLNN T,10000  
 JRST RDSP52  
 LSH A,\*C  
 JRST RDSP31  
 MUL A,RDIBS  
 LSH A+1,1  
 LSHC A,35.  
 RDSP52: SOJGE C,-3  
 JRST RDSP31  
  
 RDSP4: TLNE T,1000  
 MOVNS,C  
 TLNE T,4  
 ADD TT,C  
 TLNE TT,400000  
 TLO T,1000  
 MOVE A,B  
 PUSHJ P,FLOAT  
 MOVN B,TT  
 JRST,RDSP6

RDSP7: TLNE T,1000  
 FDVR A,CIRD  
 TLNN T,1000  
 FMPR A,CIRD  
 RDSP6: SOJGE B,RDSP7  
 MOVEI B,FLONUM  
 JRST,RDSP5  
  
 RDSP2: TLNE T,200  
 JRST,ER2  
 TLO T,100  
 JRST,RDCH  
  
 RDSP8: EXCH A,B  
 CAIN A,\*)  
 JRST,RDSP9  
 CAIE A,40  
 CAIN A,\*,  
 JRST,+.4  
 CAIN A,177  
 JRST,RDRUB  
 JRST,ER1  
 PUSHJ P,\*READ2  
 JRST,RDSP8+1  
 RDSP9: EXCH A,B  
 POPJ P,  
  
 CIRD: 10.0  
 RDBSV: 0  
 RDIBS: 0