

BASIC MCS 8080 GATES/ALLEN/DAVIDOFF F3 MAC 6-SEP-64 03111

MACRO 47(113) 03112 10-SEP-75 PAGE 8-10  
ERROR HANDLER, READY, COMPACTIFICATION, NEW, CLEAR, MAIN

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2396 002672# 001200 000014      35000 INR C             FBUMP CRUNCHED CHARACTER COUNT
2397                               35020 IFN STRING,<
2398 002673# 001000 000026      35040 SUI ":"           ISEE IF IT IS A COLON
2399 002674# 001000 000076      35060 JZ COLIS          IF SO ALLOW CRUNCHING AGAIN
2400 002675# 001000 000012      35080 CPI DATATK=":""
2401 002676# 001000 000205      35100 JNZ NUDATT        ISEE IF IT IS A DATA TOKEN
2402 002677# 000000 000000      35120 COLIS: STA DORES   ISETUP FLAG
2403 002700# 001000 000376      35140 COLIS: SUI REMTK=":">
2404 002701# 000000 000011      35160 IFE STRING,<SUI REMTK> IJAS IT A REM STATEMENT
2405 002702# 001000 000002      35180 JNZ KLOOP          IKEEP LOOPING
2406 002703# 000000 000000      35200 MOV B,A          ITEM DOESN'T STOP ON ":", ONLY ON A ZERO
2407 002704# 001000 000000      35220 STR1: MOV A,M          IGET A CHAR
2408 002705# 001000 000000      35240 ORA A            ISET CONDITION CODES
2409 002706# 000000 000000      35260 JZ CHDUNE         IF END OF LINE THEN DONE
2410 002707# 001000 000203      35280 CMP B             IEND OF GOBBLE
2411 002710# 001000 000026      35300 JZ STUFFH          IF YES, DONE WITH STRING
2412 002711# 000000 000024      35320 STRNG1: INX H           IINCREMENT TEXT POINTER
2413 002712# 001000 000002      35340 STAX D           ISTORE CHAR
2414 002713# 001000 000000      35360 INR C             FBUMP COUNT
2415 002714# 000000 000000      35380 INX D             IAND POINTER
2416 002715# 001000 000107      35400 JMP STR1          IKEEP LOOPING
2417 002716# 001000 000176      35420 MOV B,A          ITEM DOESN'T STOP ON ":", ONLY ON A ZERO
2418 002717# 001000 000267      35440 STR1: MOV A,M          IGET A CHAR
2419 002718# 001000 000000      35460 ORA A            ISET CONDITION CODES
2420 002720# 001000 000012      35480 JZ CHDUNE         IF END OF LINE THEN DONE
2421 002721# 000000 000000      35500 NTHIS1: INX H           IINCREMENT TEXT POINTER
2422 002722# 000000 000000      35520 STAX D           ISTORE CHAR
2423 002723# 001000 000000      35540 INR C             FBUMP COUNT
2424 002724# 001000 000016      35560 INX D             IAND POINTER
2425 002725# 000000 000000      35580 JMP STR1          IKEEP LOOPING
2426 002726# 000000 000215#      35600 NTHIS1: POP H           IRESTORE TEXT STRING
2427 002727# 001000 000043      35620 PUSH H           IAND SAVE IT BACK
2428 002730# 001000 000022      35640 INR B             IINCREMENT RESERVED WORD #
2429 002731# 001000 000014      35660 XCHG              IRESLT POINTER INTO [H,L]
2430 002732# 001000 000023      35680 NTHIS1: ORA M           ITEST BITS IN RESERVED WORD LIST
2431 002733# 001000 000003      35700 INX H             IAND
2432 002734# 000000 000000      35720 STAX D           ISTORE
2433 002735# 000000 000000      35740 INX D             IAND
2434 002736# 000000 000215#      35760 JP NTHIS1         ISKIP MORE
2435 002737# 001000 000041      35780 XCHG              IRESLT POINTER INTO [D,E]
2436 002738# 001000 000045      35800 INX H             ITEXT POINTER INTO [H,L]
2437 002740# 001000 000004      35820 JNP RESER          IDONE, MOVE TO NEXT RESERVED WORD
2438 002741# 001000 000053      35840
2439 002742# 001000 000066      35860
2440 002743# 001000 000043      35880
2441 002744# 001000 000066      35900
2442 002745# 000000 000046#      35920
2443 002746# 000000 000274#      35940
2444 002747# 001000 000053      35960 LINLIN: DCR B           FBACK ARROW SO DECREMENT COUNT
2445 002748# 001000 000003      35980 DCX H             FBACK UP POINTER
2446 002750# 001000 000000      36000 IFN REALIO,<
2447 002751# 001000 000267#      36020 OUTCHR>
2448 002752# 001000 000000      36040 JNZ INLINC          NOT TOO MANY SO CONTINUE
2449 002753# 001000 000051      36060 INLINV: IFN REALIO,<
2450 002754# 000000 001430#      36080 OUTCHR>          IPRINT THE #, OR A SECOND & IF THERE
2451 002755# 001000 0002751#      36100 WHERE TOO MANY
2452 002756# 001000 000002#      36120 CALL CRDO          ITYPE A CRLF
2453 002757# 001000 000000      36140 INLIN: LXI M,BUF
2454 002758# 000000 000000      36160 HVI B,1           ICHARACTER COUNT
2455 002759# 001000 000000      36180 INLINC: CALL INCHR  IGET A CHARACTER
2456 002760# 000000 000000      36200 IFN LENGTH,<
2457 002761# 001000 000000      36182 CPI 7             IIS IT BOB ALBRECHT RINGING THE BELL
2458 002762# 000000 000007      36184 JZ GOODCH>        IFOR SCHOOL KIDS?
2459 002763# 001000 000000      36186
2460 002764# 001000 000005      36188 JZ FININL          IF SO FINISH UP
2461 002765# 001000 000053      36200 CPI 15            IIS IT A CARRIAGE RETURN?
2462 002766# 001000 000000      36220 JZ FININL          IF SO FINISH UP
2463 002767# 001000 000000      36240 CPI 32            ICHECK FOR FUNNY CHARACTERS
2464 002768# 001000 000000      36260 JC INLINC         IINCREMENT TEXT POINTER

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2465 002769# 001000 000041      36280 INR C             FBUMP CRUNCHED CHARACTER COUNT
2466 002770# 000000 001430#      36300 IFN STRING,<
2467 002771# 001000 0002751#      36320 SUI ":"           ISEE IF IT IS A COLON
2468 002772# 001000 000002#      36340 JZ COLIS          IF SO ALLOW CRUNCHING AGAIN
2469 002773# 001000 000051      36360 CPI DATATK=":""
2470 002774# 000000 000452#      36380 JZ FININL         IF SO FINISH UP
2471 002775# 001000 000001#      36400 INR C             FBUMP COUNT
2472 002776# 001000 000000      36420 INX D             IAND
2473 002777# 001000 0001431#      36440 HVI B,1           ICHARACTER COUNT
2474 002778# 000000 000001#      36460 INLINC: CALL INCHR  IGET A CHARACTER
2475 002779# 001000 000000      36480 IFN LENGTH,<
2476 002780# 000000 000001#      36500 CPI 7             IIS IT BOB ALBRECHT RINGING THE BELL
2477 002781# 001000 000051#      36520 JZ FININL         IFOR SCHOOL KIDS?
2478 002782# 001000 000000      36540
2479 002783# 001000 000015#      36560
2480 002784# 001000 000000      36580
2481 002785# 001000 000000      36600
2482 002786# 000000 000000      36620
2483 002787# 001000 000000      36640
2484 002788# 000000 000001#      36660
2485 002789# 001000 000015#      36680
2486 002790# 000000 000000      36700
2487 002791# 000000 0002777#      36720
2488 002792# 001000 000000      36740
2489 002793# 001000 000015#      36760
2490 002794# 001000 000000      36780
2491 002795# 001000 000012#      36800
2492 002796# 001000 0003644#      36820
2493 002797# 000000 00036004#      36840
2494 002798# 001000 0000376#      36860
2495 002799# 000000 000015#      36880
2496 002800# 001000 0000451#      36900
2497 002801# 001000 000011#      36920
2498 002802# 001000 0000376#      36940
2499 002803# 001000 000000      36960
2500 002804# 001000 000040#      36980
2501 002805# 001000 0000532#      37000

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BASIC MCS 8080 GATES/ALLEN/DAVIDOFF  
F3 MAC 6-SEP-64 03:11

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ERROR HANDLER, READY, COMPACTIFICATION, NEW, CLEAR, MAIN

BASIC MDS 8080 GATES/ALLEN/DAVIDOFF  
F3 MAC 6-SEP-64 03:11

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ERROR HANDLER, READY, COMPACTIFICATION, NEW, CLEAR, MAIN

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      36960  CNC  PRINTW   YES, START OVER
      36980  INR  A
      37000  STA  LPTPOS
      37020  LPTWAT: IN  2
      37040  ANI  2
      37060  JZ   LPTHAT
      37080  POP  PSW
      37100  DUT  3      SEND OUT CHAR
      37120  RET
      37140  PATLPTC: BLOCK 20
      37160  FINLPTC: XHA A      PRESET PRINT FLAG SO OUTPUT
      37180  STA  PRTFLG   GOES TO THE TERMINAL
      37200  LDA  LPTPOS   SEE IF ANY LEFTOVERS MUST BE
      37220  DRA  A      FREE'D OUT
      37240  KZ
      37260  PRINTH: IN  2      TRY LOOKING AT LPTPOS
      37280  ANI  2      MAKE SURE LAST PRINT
      37300  JZ   PRINTW   FINISHED BY TESTING DONE
      37320  FBIT
      37340  ? SEE IF BUFFER MUST BE EMPTIED
      37360  LDH  LPTPOS
      37380  DRA  A      FCHARACTERS IN THE BUFFER?
      37400  JNZ  PRINTR   IF SO DON'T CLEAR THE BUFFER
      37420  OUT  2      OTHERWISE BUFFER MUST BE EMPTIED
      37440  DCR  A      FCLEAR THE BUFFER
      37460  PRINTR: MVI A,1      FTO PRINT A BLANK LINE
      37480  OUT  2      FELL LPT TO PRINT
      37500  DCR  A      FSTATUS REG
      37520  STA  LPTPOS   F[A]=0
      37540  RET>
      37560  TTYCHR1>
      37580  IFN  STRING,<
      37600  PUP  PSW
      37620  PUSH PSW
      37640  CPI  32      FGET THE CHARACTER
      37660  JC   THRYOUT>   FAND SAVE IT AGAIN
      37680  ?IS THIS A MEANINGFUL CHARACTER?
      37700  IFN  LENGTHMICONTRWLPTSH,<
      37720  LDA  TTYPOS>   IDON'T INCLUDE IT IN TTYPoS
      37740  CPI  LINLEN   FSEE IF PRINT HEAD IS AT THE END OF THE LINE
      37760  LINPNT1==1,-1
      37780  CZ   CRDO   FTYPE CRLF AND SET TTYPoS AND [A]=0 IF SO
      37800  INR  A      FINCREMENT TTYPoS SINCE WE'RE
      37820

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ERROR HANDLER, READY, COMPACTIFICATION, NEW, CLEAR, MAIN

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2608 003110* 001000 000002      37840 STA TTYPOS      JSTORE NEW PRINT HEAD POSITION
2609 003111* 000000 000047*      37880 IFN REALIO,<
2610 003112* 000000 005105*      37900 NOPRIN: IN 0      JGET STATUS
2611 003113* 37860 THDOUT:      37920 IFN REALIO,<
2612 003114* 000000 000000      37940 CNLC1I==,-1      JCONSOLE COMMAND CHANGE LOC
2613 003115* 001000 000333      37960 ANI DUONE      JOK TO SEND CHAR
2614 003116* 000000 000000      37980 JNZ NOPRIN>      JKEEP LOOPING
2615 003117* 000000 003114*      38000 OUT TT0CHN      JSEND OUT THE CHAR
2616 003118* 001000 000346      38020 CNLCB1==,-1      JCONSOLE COMMAND CHANGE LOC
2617 003119* 000000 000200      38040 RET          JRETURN FROM DUTCHR
2618 003120* 001000 000362      38100 INCHRI IFN REALIO,<
2619 003121* 000000 005111*      38120 TRYIN: IN 0      JGET STATUS
2620 003122* 001000 000361      38140 CNLCB2==,-1      JCONSOLE COMMAND CHANGE LOC
2621 003123* 000000 000525      38160 ANI IUONE      JTEST BIT
2622 003124* 000000 000061      38180 JNZ TRYIN>      JGO BACK & DO IT AGAIN
2623 003125* 001000 000352      38200 IN TT1CHN      JGET A CHAR
2624 003126* 000000 000353      38220 CNLCB2==,-1      JCONSOLE COMMAND CHANGE LOC
2625 003127* 000000 000000      38240 ANI 127      JGET RID OF PARITY BIT
2626 003128* 001000 000355      38260 IFN CONTRM,<
2627 003129* 000000 000000      38280 CPI CNTW      JIS IT SUPPRESS OUTPUT?
2628 003130* 001000 000356      38300 RNZ          RNF
2629 003131* 000000 000001      38320 LDA CNTWFL      JSAVE BACK
2630 003132* 001000 000356      38340 CMA          SIA CNTWFL>      JCOMPLEMENT ITS STATE
2631 003133* 000000 000000      38360 RET          JSAVE BACK
2632 003134* 001000 000346      38380 PAGE
2633 003135* 000000 000000      38400

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THE "LIST" COMMAND

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F3 MAC 6=SEP=64 03:11

MACHO 47(113) 03:12 10=SEP=75 PAGE 9+1

THE "LIST" COMMAND

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2709  
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F3 MAC 6=SEP=64 03:11

"FOR" STATEMENT

2711 39540 SUBTTL "FOR" STATEMENT  
2712 39560 ;  
2713 39580 ; NOTE:  
2714 39590 ;  
2715 39620 ; A FOR ENTRY ON THE STACK HAS THE FOLLOWING FORMAT:  
2716 39640 ;  
2717 39660 ;  
2718 39700 ; LOW ADDRESS  
2719 39720 ; TOKEN (FORTK IN HIGH BYTE) 1 BYTE  
2720 39740 ; A POINTER TO THE LOOP VARIABLE 2 BYTES  
2721 39760 ; A BYTES INDICATING THE SIGN OF THE INCREMENT 1 BYTE  
2722 39780 ; THE STEP 4 BYTES  
2723 39800 ; THE UPPER VALUE 4 BYTES  
2724 39820 ; THE LINE # OF THE "FOR" STATEMENT 2 BYTES  
2725 39840 ; A TEXT POINTER INTO THE "FOR" STATEMENT 2 BYTES  
2726 39860 ; HIGH ADDRESS  
2727 39880 ;  
2728 39900 ; TOTAL 16 BYTES  
2729 39920 ;  
2730 2731 003154' 001000 000076 39980 FOR: IFN LENGTH,<  
2732 003154' 001000 000144 39980 MYI A,100  
2733 003155' 000000 000144 40000 STA SUBFLG> DON'T RECOGNIZE SUBSCRIPTED VARIABLES  
2734 003156' 000000 000062 40020 CALL LET READ THE VARIABLE AND ASSIGN IT  
2735 003157' 000000 001661'  
2736 003160' 000000 003151'  
2737 003161' 001000 000315  
2738 003162' 000000 004151'  
2739 003163' 000000 003157'  
2740 40040 ; THE CORRECT INITIAL VALUE  
2741 40060 ; AND STORE A POINTER  
2742 40080 ; TO THE VARIABLE IN [TEMP]  
2743 003164' 001000 000343 40100 XTHL FNDFOR ISAVE TEXT PTR ON THE STACK  
2744 003165' 001000 000315 40120 CALL ; MUST HAVE VARIABLE POINTER IN {D,E}  
2745 003166' 000000 001744'  
2746 003167' 000000 003162'  
2747 003168' 001000 000315 40140 POP D IF {D,E}!=TEXT POINTER  
2748 003171' 001000 000358 40160 JNZ NOTOL ; IF NO MATCHING ENTRY, DON'T  
2749 003172' 0-0000 003176'  
2750 003173' 000000 003166'  
2751 40180 ; ELIMINATE ANYTHING  
2752 003174' 001000 000011 40200 DAD B IN THE CASE OF "FOR"  
2753 40220 ; WE ELIMINATE THE MATCHING ENTRY  
2754 40240 ; FALL AWAY FROM IT  
2755 003175' 001000 000371 40260 SPHL DO THE ELIMINATION  
2756 40280 ; SINCE A MATCHING ENTRY WAS FOUND  
2757 003176' 001000 000353 40300 NOTOL: XCHG IF {H,L}=TEXT POINTER  
2758 003177' 001000 000315 40320 CALL GETSTK  
2759 003200' 000000 002624'  
2760 003201' 000000 003172'  
2761 003202' 000000 000010 40340 8 MAKE SURE 16 BYTES ARE AVAILABLE  
2762 40360 ; OFF OF THE STACK  
2763 003203' 001000 000345 40380 PUSH H ; REALLY SAVE THE TEXT POINTER

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F3 MAC 6-SEP-64 03111 "FOR" STATEMENT

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2760 003204* 001000 000315    40400 CALL DATA      IGET AN [H,L] THAT POINTS
2765 003205* 000000 004072*   40400 XTHL          JUST BEYOND THE TERMINATOR
2766 003206* 000000 005260*   40400
2767
2768 003207* 001000 000343    40400
2769
2770
2771 003210* 001000 000345    40500 PUSH H      IPUT [H,L] POINTER TO TERMINATOR ON THE STACK
2772 003211* 001000 000052    40500 LHD CURLIN  JANI RESTORE [H,L] AS TEXT POINTER AT
2773 003212* 000000 001607*   40500
2774 003213* 000000 003205*   40500
2775 003214* 001000 000343    40500 XTHL          JVARIABLE NAME
2776
2777
2778 003215* 001000 000317    40500 IFN          IPUSH THE TEXT POINTER ONTO THE STACK
2779 003216* 000000 000241    40500 LENGTH=2,<
2780
2781 003217* 001000 000315    40600 IFN          LENGTH=2,< JPUT THE CURRENT LINE # IS ON THE STACK AND
2782 003218* 000000 005335*   40600 LENGTH=2,< I(H,L) IS THE TEXT POINTER
2783 003219* 000000 003212*   40600 IFE          LENGTH=2,<
2784 003220* 000000 005222*   40600 CALL FRHEVL>  CALL FRHEVL>
2785
2786 003221* 000000 003212*   40700 PUSH H      ISAVE THE TEXT POINTER
2787 003222* 001000 000345    40700 LENGTH=2,<
2788 003223* 001000 000315    40700 CALL FRCSNG>  CALL FRCSNG>
2789
2790 003224* 000000 000676*   40800 POP H       IREGAIN TEXT POINTER
2791 003225* 001000 000345    40800 PUSH B       IOPPOSITE OF PUSHR
2792 003226* 001000 000315    40800 PUSH D       ISAVE THE SIGN OF THE INCREMENT
2793 003227* 000000 000080*   40800 LXI B,SCODE+*0201*256
2794 003230* 000000 003224*   40800
2795 003231* 001000 000341    40800 MOV D,C      IGET 1,0 IN THE REGISTERS
2796 003232* 001000 000305    40900 MOV E,D
2797 003233* 001000 000325    40900 MOV A,M      IGET TERMINATING CHARACTER
2798 003234* 001000 000001    40900 CPI STEPTK  JOO WE HAVE "STEP" ?
2799 003235* 100000 000000    40900
2800 003236* 000000 004227*   40900
2801 003237* 001000 000121    40900 MOV D,C
2802 003240* 001000 000152    40900 MOV E,D      IGET THE STEP
2803 003241* 001000 000176    40900 MOV A,M
2804 003242* 001000 000376    40900 CPI STEPTK
2805 003243* 000000 000247    40900
2806 003244* 001000 000076    40900 MVI A,1      ISETUP DEFAULT SIGN
2807 003245* 000000 000001    40900
2808 003246* 001000 000302    40900 JNZ ONEON  IPUSH SOME CONSTANTS ON IF NOT
2809 003247* 000000 003265*   40900
2810 003256* 000000 003235*   40900
2811
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2815 003251* 001000 000315    41000 IFN          LENGTH=2,<
2816 003252* 000000 003247*   41000 IFN          STRING,<
2817 003253* 000000 003247*   41000 CHRGET
2818 003254* 001000 000343    41000 CALL FRNUM>  IREAD THE STEP
2819
2820
2821 003255* 001000 000315    41100 PUSH H      ISET UP THE REGISTERS
2822 003256* 000000 003224*   41100 LENGTH=2,<
2823 003257* 000000 003252*   41100 CALL FRCSNG>
2824 003258* 000000 003260*   41100
2825 003259* 000000 003260*   41100 CALL MOVRF  ISET UP THE REGISTERS
2826 003261* 000000 003227*   41100
2827 003262* 000000 003256*   41100
2828 003263* 001000 000341    41200 POP H       IGET THE SIGN OF THE INCREMENT
2829 003264* 000000 000857    41200 FSIGN H
2830 003265* 001000 000345    41200 ONEONI PUSH B   IPUT VALUE ON BACKWARDS
2831 003266* 001000 000325    41200 PUSH D       IOPPOSITE OF PUSHR
2832 003267* 001000 000365    41200 IFORONI PUSH PSW  ISAVE THE SIGN OF THE INCREMENT
2833 003270* 001000 000065    41300 INX SP
2834 003271* 001000 000345    41300 PUSH H
2835 003272* 001000 000052    41300 LHD TEMP    IGET THE POINTER TO THE VARIABLE BACK
2836 003273* 000000 001603*   41300
2837 003274* 000000 003661*   41300 XTHL          INPUT THE POINTER TO THE VARIABLE
2838 003275* 001000 000343    41300
2839 003276* 001000 000006    41360 NXTCOM: MVI B,FORTK  JUNTO THE STACK AND RESTORE THE TEXT POINTER
2840 003277* 000000 000281    41360
2841 003300* 001000 000305    41400 PUSH B
2842 003301* 001000 000063    41400 INX SP      ITHE "TOKEN" ONLY TAKES ONE BYTE OF
2843
2844
2845 003302* 001000 000000    41400 ;        ISTACK SPACE
2846 003303* 001000 000000    41400 JMP NEWSTT  FALL DONE
2847
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2849 003304* 001000 000000    41500 PAGE

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F3 MAC 6-SEP-64 03111 "FOR" STATEMENT

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2817 003252* 000000 005337*   41120 PUSH H      INPUT THE POINTER TO THE VARIABLE
2818 003253* 000000 003247*   41120 FSIGN H
2819 003254* 001000 000343    41120
2820
2821 003255* 001000 000315    41140 LENGTH=2,<
2822 003256* 000000 003224*   41140 CALL FRCSNG>
2823 003257* 000000 003252*   41140
2824 003258* 001000 000315    41180 CALL MOVRF  IPUT THE SIGN OF THE INCREMENT
2825 003260* 001000 000315    41180
2826 003261* 000000 003227*   41180
2827 003262* 001000 000341    41200 POP H       IPUT VALUE ON BACKWARDS
2828 003263* 000000 000857    41200
2829 003264* 001000 000345    41200 ONEONI PUSH B   JUNTO THE STACK AND RESTORE THE TEXT POINTER
2830 003265* 001000 000325    41200
2831 003266* 001000 000365    41200 IFORONI PUSH PSW  IPUT A "FOR" TOKEN ONTO THE STACK
2832 003267* 001000 000065    41200
2833 003270* 001000 000345    41200 INX SP
2834 003271* 001000 000052    41200 PUSH H
2835 003272* 000000 001603*   41200 LHD TEMP    IPUT THE POINTER TO THE VARIABLE BACK
2836 003273* 000000 003661*   41200
2837 003274* 001000 000343    41360 XTHL          INPUT THE POINTER TO THE VARIABLE
2838 003275* 001000 000006    41360
2839 003276* 001000 000006    41400 NXTCOM: MVI B,FORTK  JUNTO THE STACK AND RESTORE THE TEXT POINTER
2840 003277* 000000 000281    41400
2841 003300* 001000 000305    41400 PUSH B
2842 003301* 001000 000063    41400 INX SP      ITHE "TOKEN" ONLY TAKES ONE BYTE OF
2843
2844
2845 003302* 001000 000000    41400 ;        ISTACK SPACE
2846 003303* 001000 000000    41400 JMP NEWSTT  FALL DONE
2847
2848
2849 003304* 001000 000000    41500 PAGE

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BASIC MCS 8080 GATES/ALLEN/DAVIDOFF F5 MAC 6-SEP-64 03:11 MACHO 47(113) 03:12 10-SEP-75 PAGE 11  
NEW STATEMENT FETCHER

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2646          41520 SUBTTL NEW STATEMENT FETCHER
2647          41540    ;
2648          41560    ; BACK HERE FOR NEW STATEMENT. CHARACTER POINTED TO BY [H,L]
2649          41580    ; # ON END-OF-LINE, THE ADDRESS OF THIS LOCATION IS
2650          41600    ; LEFT ON THE STACK WHEN A STATEMENT IS EXECUTED SO
2651          41620    ; IT CAN MERELY DO A RETURN WHEN IT IS DONE,
2652          41640    ;
2653 003302* 41660 NEWSTT:      ;
2654          41680 IFN   LISTEN,<
2655          41700 IFN   LENGTH,<
2656 003302* 001000 000335 41720 IN    0           JCHECK FOR A CHARACTER WITHOUT
2657 003303* 000000 000000 41740          ;JOINING A "CALL" FOR SPEED
2658          41760 CNLCAH==I,-1 41780 ANI   IDONE      JCHARACTER THERE?
2659 003304* 001000 000346 41800 CZ    CNTCCN>  JSEE IF IT'S CONTROL-C
2660 003305* 001000 000001 41820          ;JUSED BY CONTINUE AND INPUT AND CLEAR
2661 003306* 001000 000314 41840 IFE   LENGTH,<
2662 003307* 001000 000345 41860 CALL  ISNCNT>>
2663 003307* 001000 000346* 41880 IFN   LENGTH,<
2664 003310* 001000 000327* 41900          ;JTO REMEMBER HOW TO RESTART THIS
2665          41920          ;ISTATEMENT
2666 003311* 001000 000042 41940 LPTSH,<XRA  A           JFORCE PRINT TO GO TO TTY AFTER LPRINT
2667 003312* 001000 001603* 41960 STA   PRTFLG> 41980 MOV   A,M      JGET CURRENT CHARACTER
2668 003313* 001000 000350* 42000          ;JWHICH TERMINATED THE LAST STATEMENT
2669 003313* 001000 000350* 42020 CPI   "#:"  JIS IT A COLON?
2670          42040 JZ    GUNE      ;
2671          42060 ORA   A           JMUST BE A ZERO
2672          42080 JNZ   SNERR     ;
2673          42100 INX   H           JCHECK POINTER TO SEE IF
2674          42120 MOV   A,M      FIT IS ZERO, IF SO WE ARE AT THE
2675 003314* 001000 000176 42140          ;END OF THE PROGRAM
2676          42160          ;JFOR HIGH PART
2677 003315* 001000 000376 42180 INX   H           JAN OFF THE END -- OK
2678 003316* 001000 000072 42200 DRA   M           ;
2679 003317* 001000 000312 42220 INX   H           ;
2680 003320* 001000 000350* 42240 JZ    ENDCON     ;
2681 003321* 001000 000351* 42260          ;JSAVE THE TEXT POINTER
2682 003322* 001000 000267 42280 MOV   E,M      JFORMAT THE LINE NUMBER
2683 003323* 001000 000302 42300 INX   H           JOUTPUT IT
2684 003324* 001000 000207* 42320 CALL  LINPRT     JPRINT THE LINE # IN [H,L]
2685 003325* 001000 000332* 42340          ;JSOME MORE FORMATING
2686 003326* 001000 000043 42360          ;JSAVE THE TEXT POINTER
2687 003327* 001000 000176 42380 SHLD  CURLIN     JSETUP CURLIN WITH THE CURRENT LINE #
2688          42400          ;JGET THE STATEMENT TYPE
2689          42420          ;JPUSH ON A RETURN ADDRESS OF NEWSTT
2690 003330* 001000 000042 42440 XCHG  D           JRESTORE THE TEXT POINTER
2691 003331* 001000 000266 42460 MVI   A,"#" 42480 OUTCHR  D           JGET THE STATEMENT TYPE
2692 003332* 001000 000043 42480          ;JPUSH ON A RETURN ADDRESS OF NEWSTT
2693 003333* 001000 000312 42500 CALL  LINPRT     JRESTORE THE TEXT POINTER
2694 003334* 001000 000350* 42520 MVI   A,"J"   JGET THE STATEMENT TYPE
2695 003335* 001000 000325 42540          ;JPUSH ON A RETURN ADDRESS OF NEWSTT
2696 003336* 001000 000076 42560 OUTCHR  D           JRESTORE THE TEXT POINTER
2697 003337* 001000 000076 42580 POP   D           JGET THE STATEMENT TYPE
2698 003338* 001000 000357 42600 GONE: RZ           JRESTORE THE TEXT POINTER
2699 003339* 001000 000021 42620 GONE: CHRGET    JGET THE STATEMENT TYPE
2700 003340* 001000 000521 42640 LXI   D,NEWSTT   JPUT ON A RETURN ADDRESS OF NEWSTT
2701 003341* 001000 000521 42660          ;JSTATEMENT
2702 003342* 001000 000525 42680 GUNE3: RZ           JIF A TERMINATOR TRY AGAIN
2703 003343* 001000 000510 42700          ;JIF "#IF" COMES HERE
2704 003344* 001000 000527 42720 GONE2: SUI  ENDTK  J"ON ... GOTO" AND "ON ... GOSUB" CUME HERE
2705 003345* 001000 000200 42740          ;JRESTORE THE TEXT POINTER
2706 003346* 001000 000233 42760          ;JGET THE STATEMENT TYPE
2707 003347* 001000 000040 42780 NUMCMD=SCRATCH=ENDTK+1 42800 JC    LET      JMUST BE A LET
2708 003348* 001000 000040 42780 CPI   NUMCMD     JRESTORE THE TEXT POINTER
2709 003349* 001000 000376 42800 JNC   SNERR     JSOME RESERVED WORD,BUT NOT
2710 003349* 001000 000340* 42820          ;JSTATEMENT RESERVED WORD
2711 003349* 001000 000340* 42840 RLC   B           JMULTIPLY BY 2
2712 003349* 001000 000011 42860 MOV   C,A      ;
2713 003349* 001000 000006 42880 MVI   B,0      ;
2714 003349* 001000 000000 42900 XCHG  D           JSTATEMENT DISPATCH TABLE
2715 003349* 001000 000000 42920 LXI   H,STMSP     JADD ON OFFSET
2716 003349* 001000 000000 42940 DAD  B           ;

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NEW STATEMENT FETCHER

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2995 003341* 001000 000355 42320 XCHG  D           J[H,L]=LINE #
2996 003342* 001000 000042 42340 SHLD  CURLIN     JSETUP CURLIN WITH THE CURRENT LINE #
2997 003343* 001000 001607* 42360          ;JTRACE FEATURE
2998 003344* 001000 000354* 42380 IFE   LENGTH=2,< 42380 LDA   TRCFLG     JSEE IF TRACE IS ON
2999          42400          ;JNON-ZERO MEANS YES
3000 003350* 001000 000267 42420 ORA   A           JSKIP THIS PRINTING
3001 003351* 001000 000351* 42440 JZ    NOTTRC    ;
3002 003352* 001000 000351* 42460          ;JSOME MORE FORMATING
3003 003353* 001000 000351* 42480 PUSH  D           JSAVE THE TEXT POINTER
3004 003354* 001000 000354* 42500 MVI   A,"#" 42520 MVI   A,"J"   JFORMAT THE LINE NUMBER
3005 003355* 001000 000355* 42520 OUTCHR  D           JOUTPUT IT
3006 003356* 001000 000356* 42540 CALL  LINPRT     JPRINT THE LINE # IN [H,L]
3007 003357* 001000 000000 42560          ;JSOME MORE FORMATING
3008 003358* 001000 000076 42580 NOTTRC> 42580 XCHG  D           JRESTORE THE TEXT POINTER
3009 003359* 001000 000076 42600 GONE: RZ           JGET THE STATEMENT TYPE
3010 003360* 001000 000521 42620 GONE: CHRGET    JPUT ON A RETURN ADDRESS OF NEWSTT
3011 003361* 001000 000000 42640 LXI   D,NEWSTT   JRESTORE THE TEXT POINTER
3012 003362* 001000 000521 42660          ;JSTATEMENT
3013 003363* 001000 000525 42680 GUNE3: RZ           JIF A TERMINATOR TRY AGAIN
3014 003364* 001000 000013 42700          ;JIF "#IF" COMES HERE
3015 003365* 001000 000533 42720 GONE2: SUI  ENDTK  J"ON ... GOTO" AND "ON ... GOSUB" CUME HERE
3016 003366* 001000 000521 42740 JC    LET      JRESTORE THE TEXT POINTER
3017 003367* 001000 000525 42760          ;JSTATEMENT RESERVED WORD
3018 003368* 001000 000525 42780 NUMCMD=SCRATCH=ENDTK+1 42800 JNC   SNERR     JSOME RESERVED WORD,BUT NOT
3019 003369* 001000 000040 42800 CPI   NUMCMD     JSTATEMENT RESERVED WORD
3020 003370* 001000 0000527 42820          ;JMULTIPLY BY 2
3021 003371* 001000 000021 42840          ;JSTATEMENT RESERVED WORD
3022 003372* 001000 000521 42860          ;JSTATEMENT RESERVED WORD
3023 003373* 001000 000521 42880          ;JSTATEMENT RESERVED WORD
3024 003374* 001000 000525 42900          ;JSTATEMENT RESERVED WORD
3025 003375* 001000 000525 42920          ;JSTATEMENT RESERVED WORD
3026 003376* 001000 000525 42940          ;JSTATEMENT RESERVED WORD
3027 003377* 001000 000525 42960          ;JSTATEMENT RESERVED WORD
3028 003378* 001000 000525 42980          ;JSTATEMENT RESERVED WORD
3029 003379* 001000 000525 43000          ;JSTATEMENT RESERVED WORD
3030 003380* 001000 000525 43020          ;JSTATEMENT RESERVED WORD
3031 003381* 001000 000525 43040          ;JSTATEMENT RESERVED WORD
3032 003382* 001000 000525 43060          ;JSTATEMENT RESERVED WORD
3033 003383* 001000 000525 43080          ;JSTATEMENT RESERVED WORD
3034 003384* 001000 000525 43100          ;JSTATEMENT RESERVED WORD
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3042 003392* 001000 000525 43260          ;JSTATEMENT RESERVED WORD
3043 003393* 001000 000525 43280          ;JSTATEMENT RESERVED WORD
3044 003394* 001000 000525 43300          ;JSTATEMENT RESERVED WORD
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3049 003399* 001000 000525 43400          ;JSTATEMENT RESERVED WORD
3050 003400* 001000 000525 43420          ;JSTATEMENT RESERVED WORD
3051 003401* 001000 000525 43440          ;JSTATEMENT RESERVED WORD
3052 003402* 001000 000525 43460          ;JSTATEMENT RESERVED WORD
3053 003403* 001000 000525 43480          ;JSTATEMENT RESERVED WORD
3054 003404* 001000 000525 43500          ;JSTATEMENT RESERVED WORD
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3176 003526* 001000 000525 45940          ;JSTATEMENT RESERVED WORD
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3179 003529* 001000 000525 46000          ;JSTATEMENT RESERVED WORD
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3183 003533* 001000 000525 46080          ;JSTATEMENT RESERVED WORD
3184 003534* 001000 000525 46100          ;JSTATEMENT RESERVED WORD
3185 003535* 001000 000525 46120          ;JSTATEMENT RESERVED WORD
3186 003536* 001000 000525 46140          ;JSTATEMENT RESERVED WORD
3187 003537* 001000 000525 46160          ;JSTATEMENT RESERVED WORD
3188 003538* 001000 000525 46180          ;JSTATEMENT RESERVED WORD
3189 003539* 001000 000525 46200          ;JSTATEMENT RESERVED WORD
3190 003540* 001000 000525 46220          ;JSTATEMENT RESERVED WORD
3191 003541* 001000 000525 46240          ;JSTATEMENT RESERVED WORD
3192 003542* 001000 000525 46260          ;JSTATEMENT RESERVED WORD
3193 003543* 001000 000525 46280          ;JSTATEMENT RESERVED WORD
3194 003544* 001000 000525 46300          ;JSTATEMENT RESERVED WORD
3195 003545* 001000 000525 46320          ;JSTATEMENT RESERVED WORD
3196 003546* 001000 000525 46340          ;JSTATEMENT RESERVED WORD
3197 003547* 001000 000525 46360          ;JSTATEMENT RESERVED WORD
3198 003548* 001000 000525 46380          ;JSTATEMENT RESERVED WORD
3199 003549* 001000 000525 46400          ;JSTATEMENT RESERVED WORD
3200 003550* 001000 000525 46420          ;JSTATEMENT RESERVED WORD
3201 003551* 001000 000525 46440          ;JSTATEMENT RESERVED WORD
3202 003552* 001000 000525 46460          ;JSTATEMENT RESERVED WORD
3203 003553* 001000 000525 46480          ;JSTATEMENT RESERVED WORD
3204 003554* 001000 000525 46500          ;JSTATEMENT RESERVED WORD
3205 003555* 001000 000525 46520          ;JSTATEMENT RESERVED WORD
3206 003556* 001000 000525 46540          ;JSTATEMENT RESERVED WORD
3207 003557* 001000 000525 46560          ;JSTATEMENT RESERVED WORD
3208 003558* 001000 000525 46580          ;JSTATEMENT RESERVED WORD
3209 003559* 001000 000525 46600          ;JSTATEMENT RESERVED WORD
3210 003560* 001000 000525 46620          ;JSTATEMENT RESERVED WORD
3211 003561* 001000 000525 46640          ;JSTATEMENT RESERVED WORD
3212 003562* 001000 000525 46660          ;JSTATEMENT RESERVED WORD
3213 003563* 001000 000525 46680          ;JSTATEMENT RESERVED WORD
3214 003564* 001000 000525 46700          ;JSTATEMENT RESERVED WORD
3215 003565* 001000 000525 46720          ;JSTATEMENT RESERVED WORD
3216 003566* 001000 000525 46740          ;JSTATEMENT RESERVED WORD
3217 003567* 001000 000525 46760          ;JSTATEMENT RESERVED WORD
3218 003568* 001000 000525 46780          ;JSTATEMENT RESERVED WORD
3219 003569* 001000 000525 46800          ;JSTATEMENT RESERVED WORD
3220 003570* 001000 000525 46820          ;JSTATEMENT RESERVED WORD
3221 003571* 001000 000525 46840          ;JSTATEMENT RESERVED WORD
3222 003572* 001000 000525 46860          ;JSTATEMENT RESERVED WORD
3223 003573* 001000 000525 46880          ;JSTATEMENT RESERVED WORD
3224 003574* 001000 000525 46900          ;JSTATEMENT RESERVED WORD
3225 003575* 001000 000525 46920          ;JSTATEMENT RESERVED WORD
3226 003576* 001000 000525 46940          ;JSTATEMENT RESERVED WORD
3227 003577* 001000 00052
```

BASIC MCS 8880 GATES/ALLEN/DAVIDOFF MACRO 4/(113) 03:12 10-SEP-75 PAGE 11-2  
 F3 MAC 6-SEP-64 03:11 NEW STATEMENT FETCHER

```

2952 003421* 001000 000116    42960  MOV   C,M      ;PUSH THE ADDRESS TO GO TO ONTO
2953 003422* 001000 000043    42980  INX   H       ;THE STACK
2954 003423* 001000 000166    43000  INX   B,M     ;PUSHM SAVES BYTES BUT NOT SPEED
2955 003424* 001000 000505    43020  PUSH  B
2956 003425* 001000 000353    43040  XCHG
2957                                     LENGTHH,<          ;RESTORE THE TEXT POINTER
2958                                     IFE
2959                                     CHRGET
2960                                     IFN   LENGTHH,<
2961 003426* 001000 000043    43120  CHRGET: INX  H      ;DUPLICATION OF CHRGET RST FOR SPEED
2962 003427* 001000 000176    43140  INX   H      ;SEE CHRGET RST FOR EXPLANATION
2963 003428* 001000 000576    43160  MOV   A,M
2964 003431* 001000 000072    43180  CPI   "#"
2965 003432* 001000 000520    43200  RNC>
2966                                     ;
2967                                     43240  ;CHRCON IS THE CONTINUATION OF THE CHRGET RST
2968                                     43260  ;
2969 003433* 001000 000576    43280  CHRCON: CPI  " "
2970 003434* 001000 000040    43300  JZ   CHRGETR ;GET ANOTHER CHARACTER
2971 003435* 001000 000512    43320  CPI   "#"
2972 003436* 001000 000565*    43340  ;#9" HAVE RETURNED, SO SEE IF NUMERIC
2973 003437* 001000 000341*    43360  CMC
2974 003440* 001000 000576    43380  INR   A      ;MAKE NUMERICS HAVE CARRY ON
2975 003441* 001000 000060    43400  DCR   A      ;SET ZERO IF [A]=0
2976                                     RET
2977 003442* 001000 000077    43420  PAGE
  
```

BASIC MCS 8880 GATES/ALLEN/DAVIDOFF MACRO 4/(113) 03:12 10-SEP-75 PAGE 12  
 F3 MAC 6-SEP-64 03:11 RESTORE,STOP,END,LINGET,CHRCON

```

2982                                     43460  SUBTTL RESTORE,STOP,END,LINGET,CHRCON
2983                                     ;
2984 003446* 001000 000353    43500  RESTOR: XCHG
2985 003447* 001000 000052    43520  LHLD   TXTTAB      ;SAVE [H,L] IN [D,E]
2986 003448* 001000 001617*    43540  ;
2987 003451* 001000 000356*    43560  OCX   H      ;INITIALIZE DATPTR TO [TXTTAB]=1
2988 003452* 001000 000053    43580  RESFIN: SHLD  DATPTR
2989 003453* 001000 000042    43600  ;READ FINISHES COME TO RESPIN
2990 003454* 001000 001627*    43620  XCHG
2991 003455* 001000 0003456*    43640  IFN   LISTEN,<
2992 003456* 001000 000353    43660  ISCNCTC: IN  0      ;GET THE TEXT POINTER BACK
2993 003457* 001000 000311    43680  ;
2994                                     ;
2995 003460* 001000 000333    43700  CNLCAS#=,-1      ;CONSOLE COMMAND CHANGE LOC
2996 003461* 001000 000000    43720  RNZ
2997                                     ;
2998 003462* 001000 000346    43740  CNTCCN: CALL  INCHR      ;JIF NO CHARACTERS THEN NO ^C
2999 003463* 001000 000001    43760  CPI   3      ;JSTUP CHARACTER IS ^C
3000 003464* 001000 000300    43780  IFE   LENGTHH,<
3001 003465* 001000 000315    43800  JMP   STOP>>
3002 003466* 001000 000326*    43820  IFN   LENGTHH,<
3003 003467* 001000 0003454*    43840  STOP: RNZ      ;RETURN IF NOT CONTROLLING AND MAKE
3004 003468* 001000 000001    43860  XWD   "#01000,,#0366  ;SAVE "STOP" STATEMENTS HAVE A TERMINATOR
3005 003469* 001000 000366    43880  ;SETUP [A] AS A FLAG WHETHER
3006 003470* 001000 000300    43900  XWD   "#01000,,#0366  ;TO TYPE THE BREAK MESSAGE
3007 003471* 001000 000365    43920  END: RNZ      ;MAKE SURE "END" STATEMENTS HAVE A TERMINATOR
3008 003472* 001000 000003    43940  SHLD  TEMP      ;SAVE FOR "CONTINUE"
3009                                     ;
3010 003473* 001000 000366    43960  STPND: PUP  B      ;POP OFF NEXTT ADDRESS
3011                                     ;
3012 003474* 001000 000300    43980  ENDCON: PUSH  PSW      ;SAVE THE MESSAGE FLAG
3013                                     ;
3014 003475* 001000 000042    44000  ;ZERO MEANS DON'T PRINT "BREAK"
3015 003476* 001000 001603*    44020  LHLD   CURLIN      ;SAVE CURLIN
3016 003477* 001000 0003466*    44040  MOV   A,L      ;
3017 003478* 001000 000052    44060  ANA   H      ;SEE IF IT WAS DIRECT
3018 003500* 001000 0001607*    44080  INR   A
3019 003501* 001000 000365    44100  JZ   DIRIS      ;JIF NOT SET UP FOR CONTINUE
3020                                     ;
3021 003502* 001000 000052    44120  SHLD  OLDLIN      ;SAVE OLD LINE #
3022 003503* 001000 0001607*    44140  LHLD   TEMP      ;GET POINTER TO START OF STATEMENT
3023 003504* 001000 0003476*    44160  ;
3024 003505* 001000 0000175    44180  ;
3025 003506* 001000 000244    44200  ;
3026 003507* 001000 0000074    44220  ;
3027 003510* 001000 000312    44240  ;
3028 003511* 001000 000356*    44260  ;
3029 003512* 001000 000356*    44280  ;
3030 003513* 001000 000042    44300  ;
3031 003514* 001000 001611*    44320  ;
3032 003515* 001000 0003511*    44340  ;
3033 003516* 001000 0000052    44360  ;
3034 003517* 001000 001603*    44380  ;
  
```

BASIC MCS 8080 GATES/ALLEN/DAVIDUFF MACHO 47(113) 03:12 10-SEP-75 PAGE 12-1  
 F5 MAC 5-SEP-64 03111 RESTORE,STOP,END,LINGET,CHRCON

```

 3035 003520' 000000 003514'
 3036 003521' 001000 000842        44160 SHLD  OLDTXT   JSAVE IT
 3037 003522' 000000 001613'
 3038 003523' 000000 003517'
 3039 003524' 000000
 3040 003524' 001000 000257        44180 DIRIS: IFN  CONTRW,<
 3041 003525' 001000 000257        44220 XRA  A
 3042 003525' 001000 000862        44240 STA  CNTWFL> ;FORCE OUTPUT
 3043 003526' 000000 001541'
 3044 003527' 000000 003522'
 3045 003530' 001000 000361        44280 PUP  PSH H,BRKTXT JGET BACK "C FLAG
 3046 003531' 001000 001541'
 3047 003532' 000000 001734'
 3048 003533' 000000 003526'
 3049 003534' 001000 000362        44320 JNZ  ERRFIN JCALL STROUT AND FALL INTO READY
 3050 003535' 000000 002127'
 3051 003536' 000000 003532'
 3052 003537' 001000 000363        44340 JMP  READY> JTYPE "READY"
 3053 003540' 000000 002145'
 3054 003541' 000000 003555'
 3055 003542' 000000
 3056 003542' 001000 000360        44360 IFE  LENGTH,<
 3057 003543' 001000 000365        44380 ODTI: RNZ  REALIO,<
 3058 003544' 000000 000821        44400 HRRZ  14,JOBUD#& JGET RID OF NEWSTT RETURN
 3059 003545' 001000 000862        44420 JRST  0(14)>
 3060 003546' 000000 001613'
 3061 003547' 000000 003540'
 3062 003548' 001000 000369        44440 IFN  LENGTH,<
 3063 003549' 001000 000369        44460 CONT: RNZ  MAKE SURE THERE IS A TERMINATOR
 3064 003549' 001000 000369        44480 MVI  E,ERRCN
 3065 003549' 000000 000821        44500 LHD  OLDTXT JA STORED TEXT POINTER OF
 3066 003549' 000000 001613'
 3067 003549' 000000 003540'
 3068 003550' 001000 000353        44540 IFE  LENGTH,<
 3069 003550' 001000 000852        44560 XCHG  LHD,L JSAVE [H,L]
 3070 003551' 001000 000374        44580
 3071 003551' 001000 000865        44600 MOV  A,M JSTOP,"END",TYPING CRLF
 3072 003552' 001000 000852        44620 ORA  L JTO "INPUT" AND "C" SETUP OLDTXT
 3073 003553' 000000 002182'
 3074 003554' 000000 003546'
 3075 003555' 001000 000353        44660 XCHG  LHD,L JSET UP OLD LINE # AS CURRENT LINE #
 3076 003556' 001000 000852        44680
 3077 003557' 000000 001611'
 3078 003557' 000000 003553'
 3079 003558' 001000 000864        44700 SHLD  CURLIN JRESTORE [H,L]
 3080 003558' 001000 001607'
 3081 003559' 000000 003557'
 3082 003560' 001000 000353        44720 XCHG  RET>
 3083 003560' 001000 000851        44740 LENGTH,<
 3084 003560' 001000 000315        44760 IFN  CALL  GETBYT
 3085 003560' 000000 011020'
 3086 003560' 000000 003562'
 3087 003570' 001000 000851
  
```

BASIC MCS 8080 GATES/ALLEN/DAVIDUFF MACHO 47(113) 03:12 10-SEP-75 PAGE 12-2  
 F5 MAC 5-SEP-64 03111 RESTORE,STOP,END,LINGET,CHRCON

```

 3088 003571' 001000 000300        44800 RNZ  MAKE SURE THERE IS A TERMINATOR
 3089 003572' 001000 000874        44820 INR  A
 3090 003573' 001000 000876        44840 CPI  LINLEN MAKE SURE THE NUMBER IS REASONABLE
 3091 003574' 000000 000810
 3092 003574' 000000
 3093 003575' 001000 000852        44860 LINPT2:=1,*=1 JNC  FCERR ;"FUNCTION CALL" ERROR
 3094 003575' 001000 000852        44880
 3095 003576' 000000 010776'
 3096 003577' 000000 003567'
 3097 003580' 001000 000862        44920 STA  NULCNT JCHANGE NUMBER OF NULLS
 3098 003580' 000000 000846'
 3099 003580' 000000 003576'
 3100 003580' 001000 000851        44940 IFE  LENGTH=2,<
 3101 003580' 001000 000851        44960 RET>
 3102 003580' 001000 000876        44980 TUNI: XHD  "01000,076 ;"MVI A," NON-ZERO QUANTITY
 3103 003580' 001000 000857'        45000 TOFF: XRA  A ;MAKE [A]=0 FOR NO TRACE
 3104 003580' 001000 000862        45020 STA  THRCFLG UPDATE THE TRACE FLAG
 3105 003580' 000000 001631'
 3106 003610' 000000 003601'
 3107 003610' 001000 000851        45040
 3108 003610' 001000 000851        45060 RET>
 3109 003610' 000000
 3110 003610' 000000
 3111 003610' 000000
 3112 003612' 001000 000176        45140 ISLET: MOV  A,M
 3113 003613' 001000 000376        45160 CPI  "#"
 3114 003614' 000000 000181
 3115 003615' 001000 0008530        45180 RC  FIF LESS THAN "A", RETURN EARLY
 3116 003615' 001000 000876        45200 CPI  91 ;91="#*+1
 3117 003615' 000000 000875
 3118 003620' 001000 0008677        45220 CNC
 3119 003621' 001000 000851        45240 RET
 3120 003621' 000000
 3121 003621' 000000
 3122 003621' 000000
 3123 003621' 000000
 3124 003621' 000000
 3125 003621' 000000
 3126 003621' 000000
 3127 003621' 000000
 3128 003621' 000000
 3129 003621' 000000
 3130 003621' 000000
 3131 003621' 000000
 3132 003621' 000000
 3133 003621' 000000
 3134 003621' 000000
 3135 003621' 000000
 3136 003621' 000000
 3137 003621' 000000
 3138 003621' 000000
 3139 003621' 000000
 3140 003621' 000000
  
```

BASIC MCS 8800 GATES/ALLEN/DAVIDOFF  
F5 MAC 6=SEP=64 05111

MACHO 47(113) 05112 10=SEP=75 PAGE 12=3  
RESTORE,STOP,END,LINGET,CHRCON

5141 45680 FCERR: MVI E,ERRFC ;TOO BIG. FUNCTION CALL ERROR  
5142 45700 JMP ERROR>  
5143 45720 IFE LENGTH=2,<  
5144 003625# 001000 000327 45740 INTIDX: CHRGET  
5145 003625# 001000 000315 45760 INTID2: CALL FRMEVL ;EVALUATE A FORMULA  
5146 003625# 001000 000536#  
5147 003625# 001000 000567#  
5148 003625# 001000 000345 45780 PUSH H ;SAVE THE TEXT POINTER  
5149 003625# 001000 000315 45800 CALL FNCINT ;CONVERT THE FAC TO AN INTEGER  
5150 003630# 001000 000666#  
5151 003631# 001000 000562#  
5152 003631# 001000 000563# 45820 MOV A,H ;SEE IF THE RESULT IS NEGATIVE  
5153 003631# 001000 000564# 45840 ORA A ;BY LOOKING AT [M1]'S MSB  
5154 003634# 001000 000572 45860 JM FCERR ;DON'T ALLOW NEGATIVE NUMBERS  
5155 003635# 001000 010776#  
5156 003636# 001000 000563#  
5157 003637# 001000 000355 45880 XCHG ;RETURN THE INTEGER IN [D,E]  
5158 003642# 001000 000341 45900 PDP H ;RESTORE THE TEXT POINTER  
5159 003641# 001000 000311 45920 RET>  
5160 ;  
5161 ;  
5162 45950 ; LINGET READS A LINE # FROM THE CURRENT TEXT POSITION  
5163 46000 ;  
5164 46200 ; LINE NUMBERS RANGE FROM 0 TO 65529  
5165 46340 ;  
5166 46400 ; [D,E] IS SMASHED.  
5167 46400 ; ANSWER RETURNED IN [D,E].  
5168 46420 ; [M,L] IS UPDATED TO POINT TO THE TERMINATING CHARACTER  
5169 46440 ; AND [A] CONTAINS THE TERMINATING CHARACTER WITH CONDITION  
5170 46460 ; CODES SET UP TO REFLECT ITS VALUE.  
5172 46480 ;  
5173 003642# 001000 000553 46200 LINGET: DCX H ;  
5174 003643# 001000 000021 46220 INTDT2: LXI D,SCODE ;ZERO ACCUMULATED LINE #  
5175 003644# 001000 000000#  
5176 003645# 001000 000363#  
5177 003645# 001000 000562#  
5178 003645# 001000 000562# 46240 MURLIN: CHRGET ;  
5179 003645# 001000 000562# 46250 RNC ;IT WAS A DIGIT  
5180 003650# 001000 000565 46280 PUSH H  
5181 003652# 001000 000041 46300 PUSH PSW  
5182 003653# 001000 014630# 46320 LXI H,SCODE+6552 ;SEE IF THE LINE # IS TOO BIG  
5183 003654# 001000 000564#  
5184 003655# 001000 000547 46340 COMPAR ;  
5185 003656# 001000 000556 46360 JC SNERR ;YES, SYNTAX ERROR  
5186 003657# 001000 000557#  
5187 003658# 001000 000558#  
5188 003661# 001000 000142 46380 MOV H,D ;SAVE [D,E]  
5189 003662# 001000 000153 46400 MOV L,E  
5190 003663# 001000 000031 46420 DAD D  
5191 003664# 001000 000051 46440 DAD H  
5192 003665# 001000 000031 46460 DAD D  
5193 003666# 001000 000051 46480 DAD H ;PUTTING [D,E]\*10 INTO [H,L]

BASIC MCS 8800 GATES/ALLEN/DAVIDOFF  
F5 MAC 6=SEP=64 05111

MACHO 47(113) 05112 10=SEP=75 PAGE 12=4  
RESTORE,STOP,END,LINGET,CHRCON

5194 003667# 001000 000361 46500 POP PSW  
5195 003670# 001000 00032b 46520 SUI "0"  
5196 003671# 001000 000660  
5197 003672# 001000 000137 46540 MOV E,A  
5198 003675# 001000 000146 46560 MVI D,0  
5199 003675# 001000 000000  
5200 003675# 001000 000031 46580 DAD D ;ADD THE NEW DIGIT  
5201 003676# 001000 000355 46600 XCHG  
5202 003677# 001000 000341 46620 POP H ;GET BACK TEXT POINTER  
5203 003700# 001000 000315 46640 JMP MURLIN  
5204 003701# 001000 000364#  
5205 003702# 001000 000565#  
5206 ;  
5207 003703# 001000 000312 46660 IFN LENGTH,< ;  
5208 003704# 001000 002445# 46680 CLEAR: JZ CLEARC ;IF NO FORMULA JUST CLEAR  
5209 003705# 001000 0003701#  
5210 003706# 001000 000315 46700 CALL INTID2 ;GET AN INTEGER INTO [D,E]  
5211 003707# 001000 000362#  
5212 003710# 001000 0003704# 46720 DCK H  
5213 003711# 001000 000055 46740 CHRGET ;SEE IF ITS THE END  
5214 003712# 001000 000327 46760 RNZ ;SHOULD FINISH THERE  
5215 003713# 001000 000050 46780 PUSH H ;SAVE TXTPTR  
5216 003714# 001000 000345 46800 LHLD MEMSIZ ;GET HIGHEST ADDRESS  
5217 003715# 001000 0000252 46820 JC SNERR  
5218 003716# 001000 001545#  
5219 003717# 001000 0003707#  
5220 003720# 001000 000175 46820 MOV A,L ;SUBTRACT [H,L]-[D,E] INTO [D,E]  
5221 003721# 001000 000223 46840 SH E  
5222 003722# 001000 000137 46860 MOV E,A  
5223 003723# 001000 000174 46880 MOV A,M  
5224 003724# 001000 000232 46900 SBB D  
5225 003725# 001000 000121 46920 MOV D,A  
5226 003726# 001000 000353 46940 JC SNERR ;WANTED MORE THAN TOTAL!  
5227 003727# 001000 0002072#  
5228 003730# 001000 0003716#  
5229 003731# 001000 000056# 46960 LHLD VARTAB ;STOP LOCATION IN USE  
5230 003732# 001000 000162#  
5231 003733# 001000 000378#  
5232 003734# 001000 000001 46980 LXI B,SCODE+40 ;LEAVE BREATHING ROOM  
5233 003735# 001000 000050#  
5234 003736# 001000 000373c#  
5235 003737# 001000 000011 47000 DAD B  
5236 003738# 001000 000347 47020 COMPAR ;ROOM?  
5237 003741# 001000 000322 47040 JNC OMERR ;NO, DON'T EVEN CLEAR  
5238 003742# 001000 000205#  
5239 003743# 001000 0003735#  
5240 003744# 001000 000353 47060 XCHG ;NEW STACK LOCATION [H,L]  
5241 003745# 001000 000042 47080 SHLD STKTOP ;SET UP NEW STACK LOCATION  
5242 003746# 001000 001615#  
5243 003747# 001000 0003742#  
5244 003750# 001000 000341 47100 POP H ;REGAIN THE TEXT POINTER  
5245 003751# 001000 000303 47120 JMP CLEARC ;GO CLEAR

BASIC MCS 8080 GATES/ALLEN/DAVIDOFF MACRO 47(113) 03:12 10-SEP-75 PAGE 12-5  
F3 MAC 6-SEP-64 03111 RESTORE,STOP,END,LINGET,CHRCON

5247 003753\* 000000 003746\* 47140 PAGE

BASIC MCS 8080 GATES/ALLEN/DAVIDOFF MACRO 47(113) 03:12 10-SEP-75 PAGE 13  
F3 MAC 6-SEP-64 03111 RUN,GOTO,GOSUB,RETURN

5249 47160 SUBTTL RUN,GOTO,GOSUB,RETURN  
5250 47180 IFN LENGTH,<  
5251 003754\* 001000 000312 47200 RUNS JZ RUNC ;NO LINE # ARGUMENT  
5252 003755\* 000000 002437\*  
5253 003756\* 000000 003752\*  
5254 47220 ;CLEAN UP,SET [M,L]=[TXTTAB]=1 AND  
5255 47240 ;RETURN TO NEWSTT  
5256 003757\* 001000 000315 47260 CALL CLEARC ;CLEAN UP -- RESET THE STACK  
5257 003760\* 000000 002443\*  
5258 003761\* 000000 003755\*  
5259 47280 ;DATPTR,VARIABLES...  
5260 47300 ;[M,L] IS THE ONLY THING PRESERVED  
5261 003762\* 001000 000001 47320 LXI B,NEWSTT  
5262 003763\* 000000 003502\*  
5263 003764\* 000000 003766\*  
5264 003765\* 001000 000303 47340 JMP RUNC2> ;PUT "NEWSTT" ON AND FALL INTO "GOTO"  
5265 003766\* 000000 004007\*  
5266 003767\* 000000 003765\*  
5267 47360 ; A GOSUB ENTRY ON THE STACK HAS THE FOLLOWING FORMAT  
5268 47380 ;  
5269 47400 ; LOW ADDRESS  
5270 47420 ;  
5271 47440 ;  
5272 47460 ; A TOKEN EQUAL TO GOSUTK 1 BYTE  
5273 47480 ; THE LINE # OF THE THE GOSUB STATEMENT 2 BYTES  
5274 47500 ; A POINTER INTO THE TEXT OF THE GOSUB 2 BYTES  
5275 47520 ;  
5276 47540 ; HIGH ADDRESS  
5277 47560 ;  
5278 47580 ; TOTAL 5 BYTES  
5279 47600 ;  
5280 003770\* 001000 000315 47620 GOSUB: CALL GETSTK ;MAKE SURE THERE IS ROOM  
5281 003771\* 000000 002024\*  
5282 003772\* 000000 003766\*  
5283 003773\* 000000 000003 47640 3  
5284 003774\* 001000 000301 47660 POP B ;PDP OFF RETURN ADDRESS OF "NEWSTT"  
5285 003775\* 001000 000345 47680 PUSH H ;REALLY PUSH THE TEXT POINTER  
5286 003776\* 001000 000345 47700 PUSH H ;SAVE TEXT POINTER  
5287 003777\* 001000 000052 47720 LHLD CURLIN ;GET THE CURRENT LINE #  
5288 004000\* 000000 001607\*  
5289 004001\* 000000 003771\*  
5290 004002\* 001000 000343 47740 XTHL ;PUT CURLIN ON THE STACK AND [M,L]=TEXT PTR  
5291 004003\* 001000 000026 47760 MVI D,GOSUTK ;LEAVE A GOSUB TOKEN  
5292 004004\* 000000 000214 47780 ;ON THE STACK  
5293 47800 ;  
5294 004005\* 001000 000325 47820 PUSH D ;THE GOSUB TOKEN TAKES ONLY ONE BYTE  
5295 004006\* 001000 000063 47840 INX SP ;RESTORE RETURN ADDRESS  
5296 004007\* 001000 000305 47860 RUNC2: PUSH B ;OF "NEWSTT"  
5297 47880 ;  
5298 47900 ; IN THE 4K VERSION WE START AT THE BEGINNING  
5299 47920 ; AND SEARCH, IN THE 8K WE START WHERE WE  
5300 47940 ; ARE IF WE ARE GOING TO A FORWARD LOCATION,

BASIC MCS 8080 GATES/ALLEN/DAVIDUFF MACKO 47(113) 03:12 10-SEP-75 PAGE 13-1  
F3 MAC 6-SEP-64 03:11 RUN,GOTO,GOSUB,RETURN

3302 47960 ;  
3303 004010\* 001000 000315 47980 GUTO: CALL LINGET ;PICK UP THE LINE #  
3304 004011\* 001000 005642\*  
3305 004012\* 001000 004000\*  
3306 48000 IFE LENGTH,<RNZ ;AND PUT IT IN [D,E]  
3307 48020 IFE LENGTH,<RNZ ;SHOULD END WITH A LINE  
3308 48040 ;TERMINATOR == BLOW HIM UP  
3309 48060 ;IF IT DOESN'T  
3310 48080 ;ON GOTO MAKES THIS WRONG  
3311 48100 ;IN OTHER VERSIONS)  
3312 48120 IFN CALL FNLDIN>  
3313 004013\* 001000 000315 48140 IFN LENGTH,<CALL REM ;SKIP TO THE END OF THIS LINE  
3314 004014\* 001000 004074\*  
3315 004015\* 001000 004011\*  
3316 004016\* 001000 000345 48160 PUSH H ;SAVE THE POINTER  
3317 004017\* 001000 000052 48200 LHLD CURLIN ;GET THE CURRENT LINE #  
3318 004018\* 001000 001607\*  
3319 004019\* 001000 004014\*  
3320 004020\* 001000 000347 48220 COMPAR ;[D,E] CONTAINS WHERE WE ARE GOING  
3321 004021\* 001000 004022\* 48240 ;TO SEARCH FOR CURRENT LINE #  
3322 48260 ;SO COMPARING THEM TELL US WHETHER TO  
3323 48280 ;START SEARCHING FROM WHERE WE ARE OR  
3324 48300 ;TO START SEARCHING FROM THE BEGINNING  
3325 48320 JOF TXTTAB  
3326 004023\* 001000 000341 48340 POP H ;[H,L]=CURRENT POINTER  
3327 004024\* 001000 000043 48360 INX H ;IPOINT AT THE LINK BEYOND IT  
3328 004025\* 001000 000334 48380 CC LOOP ;SEARCH FROM THIS POINT  
3329 004026\* 001000 000344\*  
3330 004027\* 001000 000345\*  
3331 004028\* 001000 000346\*  
3332 004029\* 001000 000524 48400 CNC FNLDIN> ;SEARCH FROM THE BEGINNING -- ACTUALLY  
3333 004031\* 001000 002371\*  
3334 004035\* 001000 004026\*  
3335 48420 ;SEARCH AGAIN IF ABOVE SEARCH FAILED  
3336 004033\* 001000 000140 48440 MOV H,B  
3337 004034\* 001000 000151 48460 MOV L,C  
3338 004035\* 001000 000153 48480 DDX H  
3339 004036\* 001000 000530 48500 RC  
3340 004037\* 001000 000036 48520 USERRI MVI EERRUS ;IF A MATCH WE ARE DONE  
3341 004040\* 001000 000010 48540 JMP ERRUR ;JC=MATCH, SO IF NO MATCH WE  
3342 004041\* 001000 000503 48560 ;  
3343 004042\* 001000 002102\*  
3344 004043\* 001000 004037\*  
3345 48580 ;GIVE A "US" ERROR  
3346 48600 ;  
3347 48620 ;SEE "GOSUB" FOR THE FORMAT OF THE STACK ENTRY  
3348 48640 ;"RETURN" RESTORES THE LINE NUMBER AND TEXT POINTER ON THE STACK  
3349 48660 ;AFTER ELIMINATING ALL THE "FOR" ENTRIES IN FRONT OF THE "GOSUB"  
3350 48680 ;ENTRY  
3351 48690 ;  
3352 004044\* 001000 000500 48700 RETURN RNZ ;BLOW HIM UP IF THERE ISN'T A TERMINATOR  
3353 004045\* 001000 000026 48720 MVI D,255 ;MAKE SURE THIS VARIABLE POINTER  
3354 004046\* 001000 000377

BASIC MCS 8080 GATES/ALLEN/DAVIDUFF MACKO 47(113) 03:12 10-SEP-75 PAGE 13-2  
F3 MAC 6-SEP-64 03:11 RUN,GOTO,GOSUB,RETURN

3355 48740 ;IN [D,E] NEVER GETS MATCHED  
3356 004047\* 001000 000315 48760 CALL FNDFDR ;IGO PAST ALL THE "FOR" ENTRIES  
3357 004048\* 001000 000747\*  
3358 004051\* 001000 000482\*  
3359 004052\* 001000 000371 48780 SPML ;UPDATE THE STACK  
3360 004053\* 001000 000376 48800 CPI GOSUTK  
3361 004054\* 001000 000214  
3362 004055\* 001000 000036 48820 MVI E,EERRG ;JERROR EERRG IS "RETURN WITHOUT GOSUB"  
3363 004056\* 001000 000003  
3364 004057\* 001000 000302 48840 JNZ ERROR  
3365 004060\* 001000 002102\*  
3366 004061\* 001000 000007\*  
3367 004062\* 001000 000541 48860 PNP H ;GET LINE # "GOSUB" WAS FROM  
3368 004063\* 001000 000042 48880 SHLD CURLIN ;PUT IT INTO CURLIN  
3369 004064\* 001000 001607\*  
3370 004065\* 001000 004060\*  
3371 004066\* 001000 000041 48900 LXI H,NEWSTT  
3372 004067\* 001000 003302\*  
3373 004070\* 001000 004064\*  
3374 004071\* 001000 000343 48920 XTHL ;PUT RETURN ADDRESS OF "NEWSTT"  
3375 48940 ;BACK ONTO THE STACK, GET TEXT POINTER  
3376 48960 ;FROM "GOSUB"  
3377 48980 ;SKIP OVER SOME CHARACTERS  
3378 49000 ;SINCE WHEN "GOSUB" STUCK THE TEXT POINTER  
3379 49020 ;INTO THE STACK THE LINE # ARGUMENT HADN'T  
3380 49040 ;BEEN READ IN YET.  
3381  
3382  
3383 49100 IFN STRING,<  
3384 004072\* 001000 000001 DATA: XHD "01000,01 ;LXI B," TO PICK UP ":" INTO C AND SKIP  
3385 004073\* 001000 000072 49140 ":" ;"DATA" TERMINATES ON ":"  
3386 49160 ;AND 0, ":" ONLY APPLIES IF  
3387 49180 ;QUOTES HAVE MATCHED UP  
3388 004074\* 49200 IFE LENGTH=2,<ELSE:> ;EXECUTED "ELSE'S" ARE SKIPPED  
3389 49220 ;  
3390 49240 ;NOTE: REM MUST PRESERVE [D,E] BECAUSE OF "GO TO" AND ERROR  
3391 49260 ;  
3392 004074\* 001000 000016 49280 REM: XHD "01000,016 ;MVI C, THE ONLY TERMINATOR IS 0  
3393 004075\* 001000 000000 49300 XHD "01000,0 ;NO OPERATION  
3394 49320 ;;"DATA" ACTUALLY EXECUTES THIS 0  
3395 004076\* 001000 000006 49340 MVI B,0 ;INSIDE QUOTES THE ONLY TERMINATOR IS ZERO  
3396 004077\* 001000 000000  
3397 004100\* 001000 000171 49360 EXCHQT: MOV A,C ;WHEN A QUOTE IS SEEN THE SECOND  
3398 004101\* 001000 000110 49380 MOV C,B ;TERMINATOR IS TRADED, SO IN "DATA"  
3399 004102\* 001000 000107 49400 MOV B,A ;COLONS INSIDE QUOTATIONS WILL HAVE NO EFFECT  
3400 49420 REMER: MOV A,M ;GET THE CHARACTER  
3401 004103\* 001000 000267 49440 ORA A ;ZERO IS ALWAYS A TERMINATOR  
3402 004105\* 001000 000310 49460 RZ  
3403 004106\* 001000 000270 49480 CMP B ;TEST FOR THE OTHER TERMINATOR  
3404 004107\* 001000 000510 49500 RZ  
3405 004110\* 001000 000043 49520 INX H  
3406 004111\* 001000 000376 49540 CPI 34 ;IS IT A QUOTE?3407 004112\* 001000 000042

BASIC MCS 8080 GATES/ALLEN/DAVIDUFF MACHO 4/(113) 03:12 10-SEP-75 PAGE 13-3

F3 MAC 6-SEP=64 03111 RUN,GOTO,GOSUB,RETURN

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3406 004113* 001000 000512    49560 JZ EXCHOT    ;IF SO TIME TO TRADE
3409 004114* 000000 004100*    49580 IFE LENGTH=2,<
3410 004115* 000000 004067*    49590 ;
3411 ;
3412 ;
3413 49620 ; WHEN AN "IF" TAKES A FALSE BRANCH IT MUST FIND THE APPROPRIATE "ELSE"
3414 49640 ; TO START EXECUTION AT, "DATA" COUNTS THE NUMBER OF "IFS"
3415 49660 ; IT SEES SO THAT THE "ELSE" CODE CAN MATCH "ELSE'S WITH
3416 49680 ; "IFS", THE COUNT IS KEPT IN [D]
3417 49700 ;
3418 49720 SUI IPTK    ;IS IT AN "IF"
3419 49740 JNZ REMER    ;IF NOT, CONTINUE ON
3420 004120* 001000 004502    49760 CMP B    ;SINCE "REM" CAN'T SMASH
3421 004121* 000000 000185*    49780 ; [D,E] WE HAVE TO BE CAREFUL
3422 004122* 000000 004114*    49800 ; ISO ONLY IF B DOESN'T EQUAL
3423 004123* 001000 000270    49820 ADC D    ;IZERO WE INCREMENT D, (THE "IF" COUNT)
3424 49840 ; ICARRY ON IF [B] NOT ZERO
3425 49860 ; UPDATE [D]
3426 49880 MOV D,A>    ;REMER>
3427 004124* 001000 000212    49900 I ;
3428 004125* 001000 000127    49920 IFE STRING,<
3429 004126* 001000 000503    49940 DATA XWD  "01000,1"    ;MAKE [C]="#" AND SKIP
3430 004127* 000000 004103*    49960 ; "#"
3431 004130* 000000 004121*    50000 REM: XWD  "01000,16"    ;MAKE [C]#
3432 ;
3433 49980 ; I SO [B] IS SET UP AS THE SECONDARY TERMINATOR
3434 50000 ; AND A SCAN IS MADE FOR [B] OR ZERO
3435 ;
3436 ;
3437 49990 IFE STRING,<
3438 50010 DATA XWD  "01000,1"    ;MAKE [C]="#" AND SKIP
3439 50030 ; "#"
3440 49960 REM: XWD  "01000,16"    ;MAKE [C]#
3441 50050 ; IZERO AND NO-OPERATION
3442 50070 LOOPDR: MOV A,M    ;ALWAYS STOP ON ZERO
3443 50090 ORA A    ;CHECK FOR "#"
3444 50110 RZ    ;CHECK FOR ":" IN DATA
3445 50130 CHP C    ;LOOK AT NEXT CHARACTER
3446 50150 RZ
3447 50170 INX H
3448 50190 JMP LOOPDR>
3449 50160 PAGE

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BASIC MCS 8080 GATES/ALLEN/DAVIDUFF MACHO 4/(113) 03:12 10-SEP-75 PAGE 14

F3 MAC 6-SEP=64 03111 "LET"

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3450 50180 SUBTTL "LET"
3451 004131* 001000 000515    50200 LETS: CALL PTRGET    ;GET THE POINTER TO THE VARIABLE
3452 004132* 000000 000505*    50220 ;
3453 004133* 000000 004127*    50240 ;
3454 ;
3455 50260 ;
3456 50280 ;
3457 50300 ;
3458 004134* 001000 000517    50320 SYNCHK EQLTK    ;NAME IN TEXT AND PUT
3459 004135* 000000 000260    50340 IFN: STRING,<    ;IT ON THE STACK, [H,L] REMAINS
3460 004136* 50220 ;THE TEXT POINTER AND A,PSW ARE SETUP
3461 50360 REDINP: LDA VALTYP    ;AS THE TERMINATING CHARACTER,
3462 004136* 001000 000072    50380 PUSH PSW>    ;CHECK FOR "#"
3463 004137* 000000 001543*    50400 PUSH D    ;REDINP: STRING,<
3464 004140* 000000 004132*    50420 CALL FRMEVL    ;GET THE VALUE OF THE FORMULA
3465 004141* 001000 000365    50440 ;
3466 004142* 001000 000325    50460 ;
3467 004143* 001000 000315    50480 ;
3468 004144* 000000 0005336*    50500 SHLD TEMP    ;INTO FAC
3469 004145* 000000 004137*    50520 XTHL    ;[H,L]=POINTER TO VARIABLE
3470 50440 ;TEXT POINTER TO TOP OF STACK
3471 004146* 001000 000543    50540 SHLD TEMP    ;SAVE VARIABLE POINTER FOR "FOR"
3472 50460 ;
3473 004147* 001000 000002    50560 ;
3474 004150* 000000 001603*    50580 ;
3475 004151* 000000 004144*    50600 ;
3476 50520 IFN: STRING,<    50620 PUSH D    ;GET TEXT POINTER OFF
3477 004152* 001000 000321    50640 POP PSW    ;GET THE VALTYP OF THE
3478 004153* 001000 000361    50660 ;VARIABLE IN [A]
3479 50680 ;
3480 004154* 001000 000325    50700 PUSH D    ;RESERVE THE TEXT-POINTER
3481 50720 IFE LENGTH=2,<    50740 CPI 3    ;SEE IF IT'S A STRING
3482 004155* 001000 000376    50760 ;
3483 004156* 000000 000003    50780 INPCOM: PUSH H    ;SAVE THE POINTER AT THE VALUE POSITION
3484 004157* 001000 000345    50800 CUPNUM    ;NUMERIC, SO FORCE IT AND COPY
3485 004158* 001000 000302    50820 ;
3486 004159* 001000 000316    50840 CALL CHKSTR>    ;MAKE SURE THE FORMULA WAS A STRING
3487 004160* 000000 004150*    50860 IFN: LENGTH=2,<    50880 RAR    ;CARRY SET FOR STRING OFF
3488 004161* 001000 000315    50880 CALL CHKVAL    ;FOR NUMERIC
3489 004162* 000000 000000*    50900 ;MAKE SURE VALTYP MATCHES CARRY
3490 004163* 001000 0004161*    50920 ;AND THE ZERO FLAG
3491 50860 ;ON A NUMERIC VALTYP
3492 50880 ;JF A NUMBER COPY
3493 50900 INPCOM: PUSH H>    50920 LHLD FACLO    ;SAVE POINTER AT VARIABLE
3494 50920 ;GET POINTER TO THE DESCRIPTOR OF THE RESULT
3495 50940 ;
3496 50960 ;
3497 50980 ;
3498 50980 JZ CUPNUM    ;SAVE POINTER AT VARIABLE
3499 004166* 001000 000052    50990 LHL0 FACLO    ;GET POINTER TO THE DESCRIPTOR
3500 004167* 000000 001637*    50990 ;
3501 004170* 000000 004164*    50990 ;
3502 004171* 001000 000345    50990 PUSH H    ;SAVE THE POINTER AT THE DESCRIPTOR

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BASIC MCS 8080 GATES/ALLEN/DAVIDOFF MACHO 47(113) 03:12 10-SEP-75 PAGE 14-1

F3 MAC 6-SEP-64 03:11 "LET"

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3503 004172# 001000 000045 50940 INX H
3504 004173# 001000 000045 50960 INX H
3505 004174# 001000 000045 50980 PUSHH
3506 004175# 001000 000521 51000 PUP D
3507 004176# 001000 000052 51020 LHLD STKTOP JSEE IF IT POINTS INTO STRING SPACE
3508 004177# 002000 001615# 51040 COMPAR JIF NOT DON'T COPY
3511 004202# 001000 000321 51060 POP D JGET BACK THE POINTER AT THE DESCRIPTOR
3512 004203# 001000 000322 51080 JNC DNTCPY JDON'T COPY LITERALS
3513 004204# 000000 000000 51100 LMHD VARTAB JNOW, SEE IF ITS A VARIABLE
3514 004205# 001000 000000 51120 COMPAR JBY SEEING IF THE DESCRIPTOR
3515 004212# 001000 000153 51140 MOV L,E
3520 004213# 001000 000142 51160 MOV H,D
3521 004214# 001000 000154 51180 CC STRCPY JIS BEYOND [VARTAB], IF SO COPY
3522 004215# 000000 000000 51200 DNTCPY: LDAX D JGET THE LENGTH AND SAVE IT
3523 004217# 001000 000052 51220 PUSH PSW JSINCE WE ARE GOING TO SET IT TO
3524 004220# 001000 000365 51240 J0 SO FRETMP DOESN'T UPDATE FRET
3525 004221# 001000 000257 51260 XRA A JSET IT TO 0 -- ELIMINATING NULL
3526 004222# 001000 000258 51280 STAX D JPUTING IN FRETMP IS HARMLESS
3527 004223# 001000 000259 51300 CALL FRETMP JPUT 0 IN THE LENGTH FIELD
3528 004224# 001000 001440# 51320 LENGTH=1 JFREE IT UP
3529 004225# 000000 000215# 51340 POP PSW JGET LENGTH BACK
3530 004227# 001000 000167 51360 MOV M,A JREPLACE IT [FRETMP RETURNS D,E] IN [M,L]
3531 004228# 001000 000355 51380 XCHG POP H JPUT THE DESCRIPTOR POINTER BACK IN [D,E]
3532 004231# 001000 000341 51400 IFE LENGTH=2,4 JGET THE PLACE OF THE NEW VARIABLE
3533 004229# 001000 000361 51420 IFN LENGTH=2,< JCOPY THE DESCRIPTOR
3534 004232# 001000 000167 51440 CALL MOVE>
3535 004233# 000000 000000* 51460 IFE LENGTH=2,< CALL VMOVE>
3536 004234# 001000 000224# 51480 LENGTH=2,<
3537 004235# 001000 000341 51500 POP H JGET THE TEXT POINTER BACK
3538 004236# 001000 000311 51520 RET>
3539 004237# 001000 000341 51540 COPNUM: LENGTH=2,<
3540 004238# 001000 000346 51560 IFE ANI 6 JSETUP DISPATCH TO FORCE
3541 004239# 000000 000000* 51580 LENGTH=2,<
3542 004243# 001000 000224# 51600 FORMULA TYPE TO CONFORM
3543 004245# 001000 000341 51620 LXI H,FRCTBL JTO THE VARIABLE ITS BEING ASSIGNED TO
3544 004246# 001000 000311 51640 JTABLE OF FORCE ROUTINES
3545 004247# 001000 000341 51660 MUV C,A J{B,C}=TWO BYTE OFFSET
3546 004248# 000000 000000 51680 MVI B,B

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BASIC MCS 8080 GATES/ALLEN/DAVIDOFF MACHO 47(113) 03:12 10-SEP-75 PAGE 14-2

F3 MAC 6-SEP-64 03:11 "LET"

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3556 004249# 000000 000000 51700 DAO B
3557 004247# 001000 000011 51720 MOV A,M J{M,L}#ADDRESS TO GO TO
3558 004250# 001000 000176 51740 INX H
3559 004251# 001000 000173 51760 MOV M,M
3560 004252# 001000 000146 51780 MOV L,A
3561 004253# 001000 0020157 51800 LXI B,PUTVAL JRETURN TO PUTVAL
3562 004254# 001000 000001 51820 PUSH B
3563 004255# 000000 0042b1# 51840 PCHL JDISPATCH TO FORCE
3564 004256# 000000 004242# 51860 PUTVAL: POP H JGET THE POINTER OF WHERE TO STORE
3565 004257# 001000 000305 51880 PUSH H JTHE VALUE
3566 004260# 001000 000351 51900 CALL VMOVFM> JSAVE IT BACK
3567 004261# 001000 000341 51920 CALL VMOVFM> JMOVE THE VALUE IN
3568 004262# 001000 000000* 51940 IFN LENGTH=2,<
3569 004263# 001000 000345 51960 PUSH H JSAVE THE VARIABLE POINTER FOR "FOR"
3570 004264# 001000 000315 51980 CALL MUVMF> JTRANSFER THE VALUE
3571 004265# 001000 000000* 52000 POP D J"FOR" WANTS VARIABLE POINTER IN
3572 004266# 000000 004255# 52020 I[D,E] FOR FNDFOR
3573 004267# 001000 000341 52040 POP H JGET THE TEXT POINTER
3574 004268# 001000 000311 52060 RET
3575 004269# 000000 000000* 52080 PAGE

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BASIC MCS 8080 GATES/ALLEN/DAVIDUFF MACRO 47(113) 03:12 10-SEP-75 PAGE 15
F3 MAC 6-SEP-64 05:11 ON GOTO CODE

      5561          52100  SUBTBL UN GOTO CODE
      5562          52120  IFN LENGTH,<
      5563
      5564  004271* 001000  000215  52160  ONGOTO: CALL   GETBYT   !GET VALUE INTO (E)
      5565  004272* 000000  011020* 52160  DNGOTO: CALL   GETBYT   !GET VALUE INTO (E)
      5566  004273* 000000  004264* 52160  DNGOTO: CALL   GETBYT   !GET VALUE INTO (E)
      5567  004274* 001000  002176  52180  MOV   A,M   !GET THE TERMINATOR BACK
      5568  004275* 001000  000107  52200  MOV   B,A   !SAVE THIS CHARACTER FOR LATER
      5569  004276* 001000  000376  52220  CPI   GUSUTK !AN "ON ... GUSUB" PERHAPS?
      5570  004277* 000000  000214  52240  JZ    ISGOSU !YES, SOME FEATURE USE
      5571  004301* 000000  000305* 52240  JZ    ISGOSU !OTHERWISE MUST BE "GOTO"
      5572  004302* 000000  004276* 52260  SYNCHK GOTOK !FURTHERMORE, IT'S A GOTO
      5573  004303* 001000  000217  52260  DCX   H     !BACK UP CHARACTER POINTER
      5574  004304* 000000  000210  52300  ISGOSU: MOV   C,E   !GET COUNT INTO (C)
      5575  004305* 001000  000213  52320  LOOPON: DCR   C     !SEE IF ENOUGH SKIPS
      5576  004306* 000000  000208  52340  MOV   A,B   !PUT DISPATCH CHARACTER IN PLACE
      5577  004307* 001000  000210  52360  JZ    GUNE2 !IF DONE, GO OFF
      5578  004311* 001000  000312
      5579  004312* 000000  003376* 52380  CALL   LINGT2 !SKIP OVER A LINE #
      5580  004313* 000000  004301* 52380  CALL   LINGT2 !SKIP OVER A LINE #
      5581  004314* 001000  000315  52400  CPI   44   !A COMMA
      5582  004315* 000000  003642* 52400  CPI   44   !A COMMA
      5583  004316* 001000  000317* 52400  CPI   44   !A COMMA
      5584  004317* 001000  000316* 52400  CPI   44   !A COMMA
      5585  004318* 001000  000054* 52420  RNZ   !IF A COMMA DOESN'T DELIMIT THE END OF
      5586  004319* 001000  000500  52440  !THE LAST LINE # MUST BE THE END OF THE LINE
      5587  004321* 001000  000500  52460  JMP   LUUPON> !CONTINUE GOBBLING LINE #
      5588  004322* 001000  000503
      5589  004323* 000000  004507* 52500  PAGE
      5590  004324* 000000  004515* 52500  PAGE

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BASIC MCS 8080 GATES/ALLEN/DAVIDOFF F3 MACRO 47(113) 03/12 10-SEP-75 PAGE 16  
 6-SEP-64 03111 IF ... THEN CODE

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3615      52520 SUBTTL IF ... THEN CODE
3616 004325* 001000 000515, 52540 IFI CALL FRMEVL ;EVALUATE A FORMULA
3617 004326* 000000 005336, 52560 IFE LENGTH,<
3618 004327* 000000 004323* 52580 IFN STRING,< ;GET VALUE TYPE INTO [A]
3619          52600 LDU PSW>> ;SAVE THE VALUE TYPE ON THE STACK
3620          52620 PUSH PSW>> ;GET TERMINATING CHARACTER OF FORMULA
3621          52640 MOV A,M ;KEEPS RELATIONAL OPERATOR MEMORIES
3622          52660 IFE LENGTH,<
3623 004330* 001000 000176 52680 CALL PUSHF ;JONTO THE STACK
3624          52700 MVI D,0 ;KEEPS RELATIONAL OPERATOR MEMORIES
3625          52720 JNEQUL ;LESS THAN #4
3626          52740 JEQUAL ;EQUAL =#2
3627          52760 JUNEQUAL ;UNEQUAL THAN #1
3628          52780 LOOPIF: SUI GREATK ;CHECK FOR A RELATIONAL OPERATOR
3629          52800 JC ENDREL ;INODE
3630          52820 NUMREL=LESSKT=GREATK+1 ;NUMBER OF RELATIONAL OPERATORS
3631          52840 CPI NUMREL ;IS THIS ONE OF THEM?
3632          52860 JNC ENDREL ;IND SEE WHAT WE HAVE
3633          52880 CPI 1 ;SETUP BITS BY MAPPING
3634          52900 RAL 10 ;TO 1, 1, 1, 2 AND 2 TO 4
3635          52920 DRA D ;FOR WHILE CARRY BITS
3636          52940 MOV D,A ;STORE NEW BITS
3637          52960 CHRGET ;GET NEW CHARACTER
3638          52980 JMP LOOPIF ;SEE IF RELATIONAL
3639          53000 ENDREL: MOV A,D ;GET REALTIONAL MEMORIES
3640          53020 DRA A ;SEE IF THERE ARE ANY
3641          53040 JZ SNERR ;IN RELATIONAL OPERATORS!
3642          53060 PUSH PSW ;SAVE RELATIONAL MEMORIES
3643          53080 CALL FRMEVL ;PICK UP NEXT NON-RELATIONAL
3644          53100 JCHARACT AGAIN AND INTERPRET FORMULA
3645          53120 JANSWER LEFT IN FAC
3646          53140 IFE LENGTH=2,<CPI 44 ;A COMMA?
3647          53160 CZ CHRGTR> ;IF SO SKIP IT
3648 004331* 001000 000576 53180 IFN LENGTH,<
3649 004332* 000000 000054 53200 CPI GOTOK ;FOLLOW "GOTO" AS WELL
3650 004333* 001000 000516, 53210 JZ OKGOTO>
3651 004334* 000000 003426*, 53220
3652 004335* 000000 004326*, 53240 SYNCHK THENTK ;MUST HAVE A THEN
3653          53260 DGX H
3654 004336* 001000 000576, 53280 OKGOTO: LENGTH,<
3655 004337* 000000 000219, 53300 POP PSW ;POP OFF NUMBER
3656 004340* 001000 000512, 53320 POPR XTHL> ;COMPARE FORMULA TYPES
3657 004341* 000000 004346*, 53340
3658 004342* 000000 004334*, 53360
3659 004343* 001000 000317, 53380
3660 004344* 000000 000245, 53400
3661 004345* 001000 000053, 53420
3662 004346* 53440
3663          53460
3664          53480
3665          53500
3666          53520
3667          53540

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BASIC MCS 8080 GATES/ALLEN/DAVIDOFF MACRO 47(113) 03:12 10-SEP-75 PAGE 16-1

F3 MAC 6-SEP-64 03111 IF ... THEN CODE

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3666      53400  IFE   STRING,<PUSH H>    JSAVE THE TEXT POINTER
3669      53420  PUSH  PSW
3670      53440  IFN   STRING,<
3671      53460  LUA   VALTYP
3672      53480  CMP   H
3673      53500  JNZ   TMERR
3674      53520  ORA   A
3675      53540  JZ    NUMCHP
3676      53560  CALL  STRCMP
3677      53580  JMP   SKPNCH>
3678      53600  NUMCNP: CALL  FCOMP
3679      53620  SKPNCH: INK  A
3680      53640  RAL
3681      53660
3682      53680
3683      53700  POP   B
3684      53720  ANA   B>
3685      53740  IFN   LENGTH<
3686      53742  IFE   LENGTH=2<
3687      53744  CALL  VSIGN#>
3690      53746  IFN   LENGTH=2,<
3691      53760  FSIGN>>
3692      53780  IFE   LENGTH<
3693      53800  POP   H>
3694      53820  IFE   LENGTH=2,<
3695      004351# 001000 000312
3696      004352# 000000 004563#
3697      004353# 000000 004567#
3698      004354# 001000 000527
3699      004355# 001000 000532
3700      004356# 000000 004010#
3701      004357# 000000 004010#
3702      004358# 000000 004354#
3703      004359# 001000 000535
3704      004360# 001000 000535
3705      004361# 000000 004357#
3706      004362# 000000 004355#
3707      53880  IFN   LENGTH=2,<
3708      53890  JZ    REM>
3709      004363# 001000 00026
3710      004364# 000000 000001
3711      004365# 001000 000315
3712      004366# 000000 004072#
3713      004367# 000000 004361#
3714      53940  JMP   GONE3
3715      53960  IFE   LENGTH=2,<
3716      53980  ;
3717      54000  ; "ELSE" HANDLER, HERE ON FALSE "IF" CONDITION
3718      54020  ;
3719      54040  FALSIF: MVI  D,1
3720      54120  54140
3721      004370# 001000 000267
3722      004371# 001000 000310
3723      004372# 000000 004367
3724      004373# 001000 000376
3725      004374# 000000 000220
3726      004375# 001000 000302
3727      004376# 000000 004365#
3728      004377# 000000 004366#
3729      004400# 001000 000025
3730      004401# 001000 000302
3731      004402# 000000 004365#
3732      004403# 000000 004376#
3733      004404# 001000 000303
3734      004405# 000000 004354#
3735      004406# 000000 004402#
3736      54180  ORA   A
3737      54180  RZ
3738      54200  CHRGET
3739      54220  CPI   ELSETK
3740      54240  JNZ   SKPMRF
3741      54260  DCR   D
3742      54280
3743      54300  JNZ   SKPMRF
3744      54320
3745      54340  DUCOND>
3746      54360  PAGE

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BASIC MCS 8080 GATES/ALLEN/DAVIDOFF MACRO 47(113) 03:12 10-SEP-75 PAGE 16-2

F3 MAC 6-SEP-64 03111 IF ... THEN CODE

```

3721      004370# 001000 000267
3722      004371# 001000 000310
3723      004372# 000000 004367
3724      004373# 001000 000376
3725      004374# 000000 000220
3726      004375# 001000 000302
3727      004376# 000000 004365#
3728      004377# 000000 004366#
3729      004400# 001000 000025
3730      004401# 001000 000302
3731      004402# 000000 004365#
3732      004403# 000000 004376#
3733      004404# 001000 000303
3734      004405# 000000 004354#
3735      004406# 000000 004402#
3736      54180  ORA   A
3737      54180  RZ
3738      54200  CHRGET
3739      54220  CPI   ELSETK
3740      54240  JNZ   SKPMRF
3741      54260  DCR   D
3742      54280
3743      54300  JNZ   SKPMRF
3744      54320
3745      54340  DUCOND>
3746      54360  PAGE

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BASIC MCS 8080 GATES/ALLEN/DAVIDOFF  
F3 MAC 6-SEP-64 03111

MACRO 47(113) 03:12 10-SEP-75 PAGE 17  
PRINT CODE

5740 54480 SUBTTL PRINT CODE  
5741  
5742  
5743  
5744  
5745 54480 IFN LPTSW,<  
5746 004407\* 001000 00053 54480 LPRINT: HVI A,1 SAY NON ZERO  
5747 004410\* 001000 000527 54480 STA PRTFLG> SAVE AWAY  
5748 004411\* 001000 000512 54500 NEWCHR: DCX H  
5749 004412\* 000000 004523\* 54520 MOPRP: CHRGET GET ANOTHER CHARACTER  
5750 004413\* 000000 004405\* 54540 PRINT: JZ CRDO IIF WE SEE A TERMINATOR  
5751 004414\* 001000 000510 54580 JGO TYPE A CRLF  
5752 54580 PRINTC: RZ THERE AFTER SEEING TAB(X) OR , OR I  
5753 54600 JZ TABR> IN WHICH CASE A TERMINATOR DOES NOT  
5754 54620 MEAN WE SHOULD TYPE A CRLF  
5755 54640 JBT JUST RETURN  
5756 54660 IFE STRING,<  
5757 54680 CPI 34 IA TERMINATING QUOTE?  
5758 54700 CZ STRU1  
5759 54720 JZ NEWCHR> IA QUOTATION -- JUST PRINT IT  
5760 54740 CPI TABR  
5761 004415\* 001000 000576  
5762 004416\* 000000 000410  
5763 004417\* 001000 000512 54760 JZ TABER I THE TAB FUNCTION?  
5764 004418\* 000000 000420\*  
5765 004420\* 001000 000576 54780 IFN LENGTH,<  
5766 004421\* 000000 000242 54800 CPI SPTCK  
5767 004422\* 001000 000512 54820 JZ TABER> I THE SPC FUNCTION?  
5768 004423\* 000000 000477\*  
5769 004425\* 000000 000420\*  
5770 004427\* 001000 000345 54840 PUSH H  
5771 004430\* 001000 000576 54860 CPI 44 ISAVE THE TEXT POINTER  
5772 004431\* 000000 000054  
5773 004432\* 001000 000512 54880 JZ COMPRT JIS IT A COMMA?  
5774 004433\* 000000 000455\*  
5775 004434\* 000000 000455\*  
5776 004435\* 001000 000576 54900 CPI 59 JIS IT A ";"  
5777 004436\* 000000 000073  
5778 004437\* 001000 000512 54920 JZ NOTABR  
5779 004440\* 000000 000637\*  
5780 004441\* 000000 000455\*  
5781 004442\* 001000 000501 54940 POP B  
5782 004443\* 001000 000515 54960 CALL FRMEVL IGET RID OF OLD TEXT POINTER  
5783 004444\* 000000 000556\*  
5784 004445\* 000000 000440\*  
5785 54980 JAGAIN SO THE CONDITION CODES ARE RIGHT  
5786 55000 JEVALUATE THE FORMULA  
5787 004446\* 001000 000053 55020 DCX H IBACKUP FROM TERMINATOR  
5788 004447\* 001000 000345 55040 PUSH H ISAVE TEXT POINTER  
5789 55060 IFN STRING,<  
5790 55082 IFE LENGTH=2,<  
5791 004450\* 001000 000515 55064 CALL GETYPE JSEE IF WE HAVE A STRING  
5792 004451\* 000000 006507\*

BASIC MCS 8080 GATES/ALLEN/DAVIDOFF  
F3 MAC 6-SEP-64 03111

MACRO 47(113) 03:12 10-SEP-75 PAGE 17-1  
PRINT CODE

5793 004452\* 000000 000444\*  
5794 004453\* 001000 000512  
5795 004454\* 000000 000507\*  
5796 004455\* 000000 004451\*  
5797 55066 JZ STRUON> JIF SO, PRINT SPECIALY  
5798 55088 IFN LENGTH=2,<  
5799 55100 LDA VALTYP  
5800 55108 ORA A  
5801 004456\* 001000 000515 55110 JNZ STRUON>> JIS IT A STRING FORMULA?  
5802 004457\* 000000 000000\*  
5803 004460\* 000000 000454\*  
5804 551180 IFE STRING,<CALL STROUT> JIF STRINGS OFF JUST OUTPUT IT  
5805 551200 IFN STRING,<  
5806 004461\* 001000 000315 55200 CALL STRLIT JMAKE IT A STRING  
5807 004462\* 000000 007637\*  
5808 004463\* 000000 000457\*  
5809 004464\* 001000 000052  
5810 004465\* 000000 001637\*  
5811 004466\* 000000 004462\*  
5812 55160 IFE LPTSW,<  
5813 55180 LDA PRTFLG  
5814 55200 ORA A  
5815 55220 JZ ISTTY JLPTR OR TTY?  
5816 55240 LDA LPTPOS  
5817 55260 ADD M  
5818 55280 CPI LPTLEN  
5819 55300 JMP LINCHK JILL THIS NUMBER OVERLAP?  
5820 55320 LBL LCHK  
5821 004467\* 001000 000072 55400 ISTTY>  
5822 004468\* 000000 000467\*  
5823 004469\* 000000 000445\*  
5824 004472\* 001000 000206  
5825 004473\* 001000 000576 55440 ADD M JADD THIS LENGTH  
5826 004474\* 000000 000110 55460 CPI LINLEN JSEE IF GREATER THAN THE LINE LENGTH  
5827 004475\* 001000 000474\*  
5828 004475\* 001000 000524 55480 LINPT3:=I,=1  
5829 004476\* 000000 000051 55500 LINCHK: CNC CRDO JIF SO CRLF  
5830 004477\* 000000 000476\*  
5831 004500\* 001000 000315  
5832 004501\* 000000 007746\*  
5833 004502\* 000000 000476\*  
5834 004503\* 001000 000076  
5835 004504\* 000000 000040  
5836 004505\* 001000 000537  
5837 55520 CALL STRPRT> JPRINT THE NUMBER  
5838 55540 MVI A, " JALWAYS END WITH A SPACE  
5839 004506\* 001000 000040  
5840 004507\* 001000 000314  
5841 004510\* 000000 007746\*  
5842 004511\* 000000 004501\*  
5843 55560 OUTCHR  
5844 55580 IFN STRING,<  
5845 55590 IFE LENGTH=2,<  
5846 004508\* 001000 000267 55595 ORA A JTURN OFF THE ZERO FLAG  
5847 004509\* 001000 000314  
5848 004511\* 000000 007746\*  
5849 004511\* 000000 004501\*  
5850 55598 IFN LENGTH=2,<  
5851 55599 XRA A  
5852 55600 STRDNN: CNZ STRPRT>> JJUST PRINT STRINGS

BASIC MCS 8080	GATES/ALLEN/DAVIDUFF	MACRO 47([11]) 03:12 10-SEP-75 PAGE 17-2	
F3	MAC	PRINT CODE	
3846 004512* 001000 000341	55620	POP H	
3847 004513* 001000 000303	55640	JMP MURPR	/PRINT SOME MORE
3848 004514* 000000 000410*			
3849 004515* 001000 000407*			
3850 004516* 001000 000654	55660	FININL: MVI M,0	INPUT A ZERO AT THE END OF BUF
3851 004517* 000000 000000			
3852 004520* 001000 000401	55680	LXI H,BUFMIN	ISETUP POINTER
3853 004521* 000000 001430*			
3854 004522* 000000 004514*			
3855	55700	CROU: IFN	LPTSH,<
3856	55720	LDA	PRTFLG
3857	55740	DHA	A
3858	55750	JNZ	PRINTW>
3859 004523* 001000 000076	55780	MVI A,13	
3860 004524* 000000 000015			
3861 004525* 001000 000662	55800	STA TTYP0S	/MAKE TTYP0S LESS THAN LINE LENGTH
3862 004526* 000000 000047*			
3863 004527* 000000 004521*			
3864	55820		
3865 004530* 001000 000337	55840	OUTCHR	ISO CRDO DOESN'T GET CALLED AGAIN
3866 004531* 001000 000676	55860	MVI A,10	
3867 004532* 000000 000012			
3868 004533* 001000 000337	55880	OUTCHR	
3869 004534* 001000 000072	55890	CRFINI LDA NULCNT	/GET NUMBER OF NULLS
3870 004535* 000000 004526*			
3871 004536* 000000 004526*			
3872 004537* 001000 000075	55920	PRTNUL: DCR A	
3873 004540* 001000 000662	55940	STA TTYP0S	FEVENTUALLY SETUP TTYP0S=0
3874 004541* 000000 000047*			
3875 004542* 000000 004535*			
3876 004543* 001000 000310	55960	RZ	
3877	55980		/NULL NULLS DONE [A]=#0
3878	55990		ISO Routines DEPEND ON CRDO
3879 004544* 001000 000365	56020	PUSH PSH	/ANU CRFINI RETURN [A]=#0 AND Z TRUE
3880 004545* 001000 000557	56040	XKA A	/A[] = A NULL
3881 004546* 001000 000537	56060	DUTCHR	/SEND IT OUT
3882 004547* 001000 000361	56080	POP PSH	/RESTORE THE COUNT
3883 004548* 001000 000303	56100	JMP PRTNUL	/LOOP PRINTING NULLS
3884 004551* 000000 004551*			
3885 004552* 000000 004541*			
3886	56120	IFE STRING,<	
3887	56140	STROUT: INX H	
3888	56160	STROUT: MOV A,M	
3889	56180	OKA A	/CHECK FOR END OF LINE
3890	56200	RZ	/LET IT END THAT WAY
3891	56220	INX H	
3892	56240	CPI 34	
3893	56260	RZ	/A TERMINATING QUOTE?
3894	56280	DUTCHR	/PRINT THE CHARACTER IN [A]
3895	56300	CPI CR	/IF IT'S A CARRIAGE RETURN
3896	56320	CZ CROU	/TYPE LINE-FEED AND SET ([TTYP0S]=0)
3897	56340	JMP STROUT>	/PRINT MORE CHARACTERS

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BASIC MCS 8080 GATES/ALLEN/DAVIDUFF MACRO 47(113) 03:12 10-SEP-75 PAGE 17-3
FS MAC 6-SEP-64 03:11 PRINT CODE

3899      56300  COMPTR: IFN    LPTSW,<
3900      56400  LDA    PRFLG   ;OUTPUT TO THE LINE PRINTER?
3901      56420  ORA    A       ;NON-ZERO MEANS YES
3902      56440  JSR    ISCTTY  ;INPUT OR TEXT FROM COMM
3903      56460  LDA    LTPPOS  ;GET LINE PRINTER POSITION
3904      56480  NLPPOS==<<LPTLEN/CLMWID>=> ;POSITION BEYOND WHICH THERE ARE
3905      56500  ;NO MORE COMMA FIELDS, SO
3906      56520  CPI    NLPPOS  ;COMMA JUST DOES A "CRDO"
3907      56540  JMP    CHKCUM  ;USE TELETYPE CHECK
3908      56560  ISCTTY:>
3909      56580  LDA    TTYPOS  ;GET TELETYPE POSITION
3910      004555* 001000  000072
3911      004554* 000000  000047,
3912      004555* 000000  004551*
3913      004555* 000000  000076
3914      004556* 001000  000376
3915      004557* 000000  000076
3916      004557* 000000  004557*
3917      004560* 001000  000324
3918      004561* 000000  004523*
3919      004562* 000000  000063
3920      004563* 000000  000322
3921      004564* 000000  004657*
3922      004565* 000000  004561*
3923      004566* 001000  000326
3924      004567* 000000  000016
3925      004570* 001000  000322
3926      004571* 000000  004566*
3927      004572* 000000  004564*
3928      004573* 001000  000057
3929      56700  JNC    NOTABR ;AND QUIT IF BEYOND THE LAST COMMA FIELD
3930      56720  MORCOM: SUI  CLMWID  ;GET [A] MODULUS CLMWID
3931      56740  JNC    MURCOM
3932      004574* 001000  000303
3933      004575* 000000  004626*
3934      004576* 000000  004571*
3935
3936      004577* 001000  000365
3937      004577* 001000  000365
3938      56800  IFN    LENGTH, <PUSH PSW> ;REMEMBER IF [A]=SPCTK OR TABTK
3939      56920  IFE    LENGTH,<
3940      56940  CALL   INTIOX> ;INTEGERIZE A FORMULA INTO {D,E}
3941      56960  IFN    LENGTH,<
3942      56980  CALL   GTBYTC> ;GET VALUE INTO [E]
3943      004600* 001000  000315
3944      004601* 000000  011617,
3945      004602* 000000  004575*
3946      004603* 001000  000317
3947      004604* 000000  0000651
3948      004605* 001000  000053
3949      004606* 001000  000351
3950      004607* 001000  000376
3951      004611* 001000  000345
3952      57000  SYNCMD  "}""
3953      57020  DCX    H
3954      57040  IFN    LENGTH,<
3955      57060  PUP    PSW   ;GET BACK SPCTK OR TABTK
3956      57080  CPI    SPCTK> ;WAS IT SPCTK?
3957      57100  PUSH   H   ;SAVE THE TEXT POINTER

```

BASIC MCS 8080 GATES/ALLEN/DAVIDUFF MACRO 47(113) 03:12 10-SEP-75 PAGE 17-4

F3 MAC 6-SEP-64 03:11 PRINT CODE

3952 57120 IFN LENGTH,<  
3953 004612# 001000 000173 57140 MOV A,E JFOR "SPC" PUT THE FORMULA  
3954 004613# 001000 000512 57160 JZ ASpac> IVALUE IN [A]  
3955 004614# 000000 000627#  
3956 004615# 000000 004601#  
3957 57180 IFN LPTSN,<  
3958 57200 LDA PRTFLG JLINER PRINTER OR TTY?  
3959 57220 ORA A INON-ZERO MEANS LPT  
3960 57240 JZ TYTIST  
3961 57260 LDA LPTPOS JGET LINE PRINTER POSITION  
3962 57280 JMP DOSIZT>  
3963 004616# 001000 000072 57300 TYTIST: LDA TTYPOS JGET TELETYPE PRINT POSITION  
3964 004617# 000000 000647#  
3965 004620# 000000 004614#  
3966 004621# 001000 000057 57320 DOSIZT: CMA JPRINT [E]=[A] SPACES  
3967 004622# 001000 000003 57340 ADD E  
3968 004623# 001000 000322 57360 JNC NOTABR JIF NEGATIVE, DON'T PRINT ANY  
3969 004624# 000000 004637#  
3970 004625# 000000 004617#  
3971 57380  
3972 004626# 001000 000074 57400 ASpac1: INH A JSPACES  
3973 004627# 001000 000107 57420 ASpac1: MOV B,A I[B]=NUMBER OF SPACES TO PRINT  
3974 004630# 001000 000076 57440 MVI A," "  
3975 004651# 000000 000040  
3976 004652# 001000 000537 57460 REPOUT: DUTCHR JPRINT [A]  
3977 004653# 001000 000005 57480 DCR B JDECREMENT THE COUNT  
3978 004654# 001000 000502 57500 JNZ REPOUT  
3979 004655# 000000 00052#  
3980 004656# 000000 000624#  
3981 004657# 001000 000301 57520 NOTABR: POP H JICK UP TEXT POINTER  
3982 004640# 001000 000327 57540 CHRGET H JAND THE NEXT CHARACTER  
3983 004641# 001000 000303 57560 JMP PRINTC JAND SINCE WE JUST PRINTED  
3984 004642# 000000 004414#  
3985 004643# 000000 004635#  
3986 57580 JSPACES, DON'T CALL CRDO  
3987 57600 JIF IT'S THE END OF THE LINE  
3988 57620 PAGE

BASIC MCS 8080 GATES/ALLEN/DAVIDUFF MACRO 47(113) 03:12 10-SEP-75 PAGE 18  
F3 MAC 6-SEP-64 03:11 INPUT AND READ CODE

3989 57640 SUBTTL INPUT AND READ CODE  
3990 57660 IFN LENGTH,<  
3991 004664# 000000 000077 TRYAGN: DC?"REDO FROM START"  
3992 004665# 000000 000122  
3993 004666# 000000 000105  
3994 004667# 000000 000104  
3995 004650# 000000 000117  
3996 004651# 000000 000040  
3997 004652# 000000 000106  
3998 004653# 000000 000122  
3999 004654# 000000 000017  
4000 004655# 000000 000113  
4001 004656# 000000 000040  
4002 004657# 000000 000123  
4003 004660# 000000 000124  
4004 004661# 000000 000101  
4005 004662# 000000 000122  
4006 004663# 000000 000124  
4007 004664# 000000 000324  
4008 004665# 000000 000015 57700 ACRLF  
4009 004665# 000000 000012  
4010 004666# 000000 000000 57720  
4011 57740 ; HERE WHEN THE DATA THAT WAS TYPED IN OR IN "DATA" STATEMENTS  
4012 57760 ; IS IMPROPERLY FORMATTED, FOR "INPUT" WE START AGAIN.  
4013 57780 ; FOR "DATA" WE GIVE A SYNTAX ERROR AT THE DATA LINE  
4014 57800 ;  
4015 57820 ;  
4016 004667# 000000 000072 57840 TRMOK: LDA FGINP JHAS IT READ OR INPUT?  
4017 004670# 000000 001102#  
4018 004671# 000000 004642#  
4019 004672# 001000 000267 57880 ORA A IZERO=INPUT  
4020 004673# 001000 000302 57880 JNZ DATSNE JGIVE ERROR AT DATA LINE  
4021 004674# 000000 002064#  
4022 004675# 000000 004676#  
4023 57900 POP B JGET RID OF THE POINTER INTO THE VARIABLE LIST  
4024 004676# 001000 000301  
4025 004677# 001000 000041 57920 LXI H,TRYAGN  
4026 004706# 000000 000644#  
4027 004701# 000000 004674#  
4028 004702# 001000 000315 57940 CALL STROUT JPRINT "?REDO FROM START"  
4029 004703# 000000 007743#  
4030 004704# 000000 004700#  
4031 004705# 001000 000052 57960 LHLD TEMP JSTART ALL OVER BY GOING BACK  
4032 004706# 000000 001603#  
4033 004707# 000000 004703#  
4034 004710# 001000 000511 57980 RET> JTO NEWSTT POINTING AT THE START OF  
4035 004711# 001000 000041 57982 INPUT: IOF THE "INPUT" STATEMENT  
4036 004711#  
4037 58000 IFN LENGTH,<  
4038 004711# 001000 000376 58020 CPI 34 JIS IT A QUOTE?  
4039 004712# 000000 000042  
4040 58040 IFN CONTRW,<  
4041 004713# 001000 000076 58060 MVI A,B JBE TALKATIVE

BASIC MCS 8080 GATES/ALLEN/DAVIDUFF MACRO 47(113) 03:12 10-SEP+75 PAGE 18-1  
 F3 MAC 6=SEP+64 03111 INPUT AND READ CODE

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 4042 004714* 001000 000000      58100 STA CNTWFL>    ;IF FORCE OUTPUT
 4043 004715* 001000 000002      58120 JNZ NOTQTI ;IF NOT NO MESSAGE
 4044 004716* 001000 000003      58140 IFN STRING,<
 4045 004717* 001000 0007648#    58160 CALL STRLTI ;MAKE THE MESSAGE A STRING
 4046 004720* 001000 000302      58180 SYNCHK 59 ;MUST END WITH SEMI-COLON
 4047 004721* 001000 0004735#    58200 PUSH H ;REMEMBER WHERE IT ENDED
 4048 004722* 001000 0004716#    58220 CALL STRPRT ;PRINT IT OUT
 4049 004723* 001000 0008315     58240 POP H>
 4050 004724* 001000 0007648#    58260 IFE STRING,<
 4051 004725* 001000 0008317     58280 CALL STRUI ;JENUS WITH SEMI-COLON
 4052 004726* 001000 0008317     58300 SYNCHK 59>>
 4053 004730* 001000 0008345     58320 PUSH H ;JENUS WITH SEMI-COLON
 4054 004731* 001000 0008315     58340 CALL STRPRT ;PRINT IT OUT
 4055 004732* 001000 00087746#   58360 IFE FUNCTS,<
 4056 004733* 001000 0008747#    58380 LHLDO CURLIN ;IS IT DIRECT?
 4057 004734* 001000 0008541     58400 MVI E,ERRIO ;IF SO "ILLEGAL DIRECT" ERROR
 4058 004735* 001000 0008345     58420 INX H ;DIRECT MEANS THAT
 4059 004736* 001000 0008753#    58440 MOV A,L ;JURLIN=E$5535
 4060 004737* 001000 0008753#    58460 DRA H ;ADDED ONE AND GOT 87
 4061 004738* 001000 0008753#    58480 JZ ERROR> ;IF SO, GO COMPLAIN
 4062 004739* 001000 0008753#    58500 IFN FUNCTS,<
 4063 004740* 001000 0008747#    58520 CALL ERDRIR> ;USE COMMON ROUTINE SINCE DEF
 4064 004741* 001000 0008315     58540 GETAGNI CALL QINLIN ;IDIRECT IS ALSO ILLEGAL
 4065 004742* 001000 0008252#    58560 LENGTH,<INX H ;ITYPE "?" AND INPUT A LINE OF TEXT
 4066 004743* 001000 00084737#   58580 MOV A,M
 4067 004744* 001000 00084737#   58600 DRA A
 4068 004745* 001000 0008176     58620 DCX H
 4069 004746* 001000 00080267    58640 POP B
 4070 004747* 001000 00080053    58660 JZ STPEND ;ITAKE OFF SINCE MAYBE LEAVING
 4071 004748* 001000 00080301    58680 GETAGNI CALL QINLIN ;IF EMPTY LEAVE
 4072 004749* 001000 00080312    58700 PUSH B>
 4073 004750* 001000 00080305    58720 JMP INPCON ;PUT BACK SINCE DIDN'T LEAVE
 4074 004751* 001000 00080303    58740 READ: PUSH H ;ISAVE THE TEXT POINTER
 4075 004752* 001000 00084762#   58760 LHLDO DATPTK ;IGET LAST DATA LOCATION
 4076 004753* 001000 00084762#   58780
 4077 004754* 001000 00084758#   58800
 4078 004755* 001000 00084758#   58820
 4079 004756* 001000 00084765#   58840 ; IN THE PROCESSING OF DATA AND READ STATEMENTS:
 4080 004757* 001000 00084765#   58860 ; ONE POINTER POINTS TO THE DATA (IE THE NUMBERS BEING Fetched)
 4081 004758* 001000 00084765#   58880 ; AND ANOTHER POINTS TO THE LIST OF VARIABLES
 4082 004759* 001000 00084765#   58900 ; THE POINTER INTO THE DATA ALWAYS STARTS POINTING TO A
 4083 004760* 001000 00084765#   58920 ; TERMINATOR -- A, , OR END-OF-LINE
 4084 004761* 001000 00084765#   58940 ; LENGTH
 4085 004762* 001000 00084765#   58960 XTHL ;IN(L)=VARIABLE LIST POINTER
 4086 004763* 001000 00084765#   58980 XTHL ;DATA POINTER GOES ON THE STACK
 4087 004764* 001000 00084765#   59000 XWD "01000,"1 ;"FLXI B," OVER THIS CHECK
 4088 004765* 001000 00084765#   59020 LDOPUT2: SYNCHK 44 ;MAKE SURE THERE IS A ","
 4089 004766* 001000 00084765#   59040 CALL PTRGET ;READ THE VARIABLE LIST
 4090 004767* 001000 00084765#   59060
 4091 004768* 001000 00084765#   59080 XTHL ;AND GET THE POINTER TO A VARIABLE INTO {D,E}
 4092 004769* 001000 00084765#   59100 XTHL ;PUT THE VARIABLE LIST POINTER ONTO THE
 4093 004770* 001000 00084765#   59120 ISTACK ;ISTACK AND TAKE THE
 4094 004771* 001000 00084765#   59140 IUDATA LIST POINTER OFF
 4095 004772* 001000 00084765#   59160 ; NOTE AT THIS POINT WE HAVE A VARIABLE WHICH WANTS DATA
 4096 004773* 001000 00084765#   59180 ; AND SO WE MUST GET DATA OR COMPLAIN
 4097 004774* 001000 00084765#   59200 ; LENGTH
 4098 004775* 001000 00084765#   59220 PUSH D ;SAVE THE POINTER TO THE VARIABLE WE
 4099 004776* 001000 00084765#   59240 JAR ABOUT TO SET UP A VALUE
 4100 004777* 001000 00084765#   59260 MOV A,M ;SINCE THE DATA LIST POINTER ALWAYS POINTS
 4101 004778* 001000 00084765#   59280 JAT A TERMINATOR LETS READ THE
 4102 004779* 001000 00084765#   59300 CPI 44 ;TERMINATOR INTO [A] AND SEE WHAT
 4103 004780* 001000 00084765#   59320 JZ DATBK ;IT IS
 4104 004781* 001000 00084765#   59340
 4105 004782* 001000 00084765#   59360 JZ DATBK ;A COMMA SO A VALUE MUST FOLLOW
 4106 004783* 001000 00084765#   59380 IFE LENGTH,<
 4107 004784* 001000 00084765#   59400 DRA A ;IN THE 4K VERSION
 4108 004785* 001000 00084765#   59420 JNZ SNERR> ;DATA MUST BE ALONE ON A LINE
 4109 004786* 001000 00084765#   59440 LUA FLGINP ;ISEE WHAT TYPE OF STATEMENT THIS WAS
 4110 004787* 001000 00084765#   59460 IFE LENGTH,<
 4111 004788* 001000 00084765#   59480 INX H ;POINT AT POINTER TO NEXT LINE
 4112 004789* 001000 00084765#   59500 JNZ DATFND> ;IF IT IS A READ GO
 4113 004790* 001000 00084765#   59520 ISEARCH FOR ANOTHER DATA STATEMENT
 4114 004791* 001000 00084765#   59540
 4115 004792* 001000 00084765#   59560 IFN LENGTH,<JNZ DATLDP>
 4116 004793* 001000 00084765#   59580
 4117 004794* 001000 00084765#   59600
 4118 004795* 001000 00084765#   59620
 4119 004796* 001000 00084765#   59640
 4120 004797* 001000 00084765#   59660
 4121 004798* 001000 00084765#   59680
 4122 004799* 001000 00084765#   59700
 4123 004800* 001000 00084765#   59720
 4124 004801* 001000 00084765#   59740
 4125 004802* 001000 00084765#   59760
 4126 004803* 001000 00084765#   59780
 4127 004804* 001000 00084765#   59800
 4128 004805* 001000 00084765#   59820
 4129 004806* 001000 00084765#   59840
 4130 004807* 001000 00084765#   59860
 4131 004808* 001000 00084765#   59880
 4132 004809* 001000 00084765#   59900
 4133 004810* 001000 00084765#   59920
 4134 004811* 001000 00084765#   59940
 4135 004812* 001000 00084765#   59960
 4136 004813* 001000 00084765#   59980
 4137 004814* 001000 00084765#   60000
 4138 004815* 001000 00084765#   60020
 4139 004816* 001000 00084765#   60040
 4140 004817* 001000 00084765#   60060
 4141 004818* 001000 00084765#   60080
 4142 004819* 001000 00084765#   60100
 4143 004820* 001000 00084765#   60120
 4144 004821* 001000 00084765#   60140
 4145 004822* 001000 00084765#   60160
 4146 004823* 001000 00084765#   60180
 4147 004824* 001000 00084765#   60200
 4148 004825* 001000 00084765#   60220
 4149 004826* 001000 00084765#   60240
 4150 004827* 001000 00084765#   60260
 4151 004828* 001000 00084765#   60280
 4152 004829* 001000 00084765#   60300
 4153 004830* 001000 00084765#   60320
 4154 004831* 001000 00084765#   60340
 4155 004832* 001000 00084765#   60360
 4156 004833* 001000 00084765#   60380
 4157 004834* 001000 00084765#   60400
 4158 004835* 001000 00084765#   60420
 4159 004836* 001000 00084765#   60440
 4160 004837* 001000 00084765#   60460
 4161 004838* 001000 00084765#   60480
 4162 004839* 001000 00084765#   60500
 4163 004840* 001000 00084765#   60520
 4164 004841* 001000 00084765#   60540
 4165 004842* 001000 00084765#   60560
 4166 004843* 001000 00084765#   60580
 4167 004844* 001000 00084765#   60600
 4168 004845* 001000 00084765#   60620
 4169 004846* 001000 00084765#   60640
 4170 004847* 001000 00084765#   60660
 4171 004848* 001000 00084765#   60680
 4172 004849* 001000 00084765#   60700
 4173 004850* 001000 00084765#   60720
 4174 004851* 001000 00084765#   60740
 4175 004852* 001000 00084765#   60760
 4176 004853* 001000 00084765#   60780
 4177 004854* 001000 00084765#   60800
 4178 004855* 001000 00084765#   60820
 4179 004856* 001000 00084765#   60840
 4180 004857* 001000 00084765#   60860
 4181 004858* 001000 00084765#   60880
 4182 004859* 001000 00084765#   60900
 4183 004860* 001000 00084765#   60920
 4184 004861* 001000 00084765#   60940
 4185 004862* 001000 00084765#   60960
 4186 004863* 001000 00084765#   60980
 4187 004864* 001000 00084765#   61000
 4188 004865* 001000 00084765#   61020
 4189 004866* 001000 00084765#   61040
 4190 004867* 001000 00084765#   61060
 4191 004868* 001000 00084765#   61080
 4192 004869* 001000 00084765#   61100
 4193 004870* 001000 00084765#   61120
 4194 004871* 001000 00084765#   61140
 4195 004872* 001000 00084765#   61160
 4196 004873* 001000 00084765#   61180
 4197 004874* 001000 00084765#   61200
 4198 004875* 001000 00084765#   61220
 4199 004876* 001000 00084765#   61240
 4200 004877* 001000 00084765#   61260
 4201 004878* 001000 00084765#   61280
 4202 004879* 001000 00084765#   61300
 4203 004880* 001000 00084765#   61320
 4204 004881* 001000 00084765#   61340
 4205 004882* 001000 00084765#   61360
 4206 004883* 001000 00084765#   61380
 4207 004884* 001000 00084765#   61400
 4208 004885* 001000 00084765#   61420
 4209 004886* 001000 00084765#   61440
 4210 004887* 001000 00084765#   61460
 4211 004888* 001000 00084765#   61480
 4212 004889* 001000 00084765#   61500
 4213 004890* 001000 00084765#   61520
 4214 004891* 001000 00084765#   61540
 4215 004892* 001000 00084765#   61560
 4216 004893* 001000 00084765#   61580
 4217 004894* 001000 00084765#   61600
 4218 004895* 001000 00084765#   61620
 4219 004896* 001000 00084765#   61640
 4220 004897* 001000 00084765#   61660
 4221 004898* 001000 00084765#   61680
 4222 004899* 001000 00084765#   61700
 4223 004900* 001000 00084765#   61720
 4224 004901* 001000 00084765#   61740
 4225 004902* 001000 00084765#   61760
 4226 004903* 001000 00084765#   61780
 4227 004904* 001000 00084765#   61800
 4228 004905* 001000 00084765#   61820
 4229 004906* 001000 00084765#   61840
 4230 004907* 001000 00084765#   61860
 4231 004908* 001000 00084765#   61880
 4232 004909* 001000 00084765#   61900
 4233 004910* 001000 00084765#   61920
 4234 004911* 001000 00084765#   61940
 4235 004912* 001000 00084765#   61960
 4236 004913* 001000 00084765#   61980
 4237 004914* 001000 00084765#   62000
 4238 004915* 001000 00084765#   62020
 4239 004916* 001000 00084765#   62040
 4240 004917* 001000 00084765#   62060
 4241 004918* 001000 00084765#   62080
 4242 004919* 001000 00084765#   62100
 4243 004920* 001000 00084765#   62120
 4244 004921* 001000 00084765#   62140
 4245 004922* 001000 00084765#   62160
 4246 004923* 001000 00084765#   62180
 4247 004924* 001000 00084765#   62200
 4248 004925* 001000 00084765#   62220
 4249 004926* 001000 00084765#   62240
 4250 004927* 001000 00084765#   62260
 4251 004928* 001000 00084765#   62280
 4252 004929* 001000 00084765#   62300
 4253 004930* 001000 00084765#   62320
 4254 004931* 001000 00084765#   62340
 4255 004932* 001000 00084765#   62360
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 4259 004936* 001000 00084765#   62440
 4260 004937* 001000 00084765#   62460
 4261 004938* 001000 00084765#   62480
 4262 004939* 001000 00084765#   62500
 4263 004940* 001000 00084765#   62520
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 4266 004943* 001000 00084765#   62580
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 4270 004947* 001000 00084765#   62660
 4271 004948* 001000 00084765#   62680
 4272 004949* 001000 00084765#   62700
 4273 004950* 001000 00084765#   62720
 4274 004951* 001000 00084765#   62740
 4275 004952* 001000 00084765#   62760
 4276 004953* 001000 00084765#   62780
 4277 004954* 001000 00084765#   62800
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 4286 004963* 001000 00084765#   62980
 4287 004964* 001000 00084765#   63000
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 4290 004967* 001000 00084765#   63060
 4291 004968* 001000 00084765#   63080
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 4293 004970* 001000 00084765#   63120
 4294 004971* 001000 00084765#   63140
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 4296 004973* 001000 00084765#   63180
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 4300 004977* 001000 00084765#   63260
 4301 004978* 001000 00084765#   63280
 4302 004979* 001000 00084765#   63300
 4303 004980* 001000 00084765#   63320
 4304 004981* 001000 00084765#   63340
 4305 004982* 001000 00084765#   63360
 4306 004983* 001000 00084765#   63380
 4307 004984* 001000 00084765#   63400
 4308 004985* 001000 00084765#   63420
 4309 004986* 001000 00084765#   63440
 4310 004987* 001000 00084765#   63460
 4311 004988* 001000 00084765#   63480
 4312 004989* 001000 00084765#   63500
 4313 004990* 001000 00084765#   63520
 4314 004991* 001000 00084765#   63540
 4315 004992* 001000 00084765#   63560
 4316 004993* 001000 00084765#   63580
 4317 004994* 001000 00084765#   63600
 4318 004995* 001000 00084765#   63620
 4319 004996* 001000 00084765#   63640
 4320 004997* 001000 00084765#   63660
 4321 004998* 001000 00084765#   63680
 4322 004999* 001000 00084765#   63700
 4323 005000* 001000 00084765#   63720
 4324 005001* 001000 00084765#   63740
 4325 005002* 001000 00084765#   63760
 4326 005003* 001000 00084765#   63780
 4327 005004* 001000 00084765#   63800
 4328 005005* 001000 00084765#   63820
 4329 005006* 001000 00084765#   63840
 4330 005007* 001000 00084765#   63860
 4331 005008* 001000 00084765#   63880
 4332 005009* 001000 00084765#   63900
 4333 005010* 001000 00084765#   63920
 4334 005011* 001000 00084765#   63940
 4335 005012* 001000 00084765#   63960
 4336 005013* 001000 00084765#   63980
 4337 005014* 001000 00084765#   64000
 4338 005015* 001000 00084765#   64020
 4339 005016* 001000 00084765#   64040
 4340 005017* 001000 00084765#   64060
 4341 005018* 001000 00084765#   64080
 4342 005019* 001000 00084765#   64100
 4343 005020* 001000 00084765#   64120
 4344 005021* 001000 00084765#   64140
 4345 005022* 001000 00084765#   64160
 4346 005023* 001000 00084765#   64180
 4347 005024* 001000 00084765#   64200
 4348 005025* 00
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4148 00501b* 000000 005011*      59580 MVI A,"?"  

4149 005017* 001000 000076      59600 OUTCHR1  

4150 005021* 001000 005537      59600 CALL QINLIN2 DOUBLE PROMPT WHEN WE NEED MORE INPUT  

4151 005022* 001000 005151      596003 GET A WHOLE LINE AFTER TYPING "?"  

4152 005023* 000000 002522*  

4153 005024* 000000 005015*  

4154 005025* 000000 005025*  

4155 005026* 001000 000072      596404 THE DATA NOW STARTS AT THE BEGINNING  

4156 005027* 000000 001543*      596605 IOP OF THE BUFFER  

4157 005028* 000000 005025*      596806 [AN] QINLIN LEAVES [M,L]=BUF  

4158 005029* 001000 000376      59700 DATBK:  

4159 005030* 001000 000376      59700 IFE LENGTHH,<PUP 07 IPOP OFF POINTER TO THE VARIABLE  

4160 005031* 000000 000003      59740 INX H8 IF[UDE] CHARACTER POINTER  

4161 005032* 001000 000365      59760 CALL REINDP>9 IREAD A VALUE USING "LET" CODE  

4162 005033* 001000 000302      59780 IFN LENGTH,<  

4163 005034* 000000 005070*      59800 STRING,<  

4164 005035* 001000 000072      59820 LDA VALTYP10 ISEE IF ITS NUMERIC OR STRING  

4165 005036* 000000 005025*  

4166 005037* 000000 005025*  

4167 005038* 001000 000376      59840 IFE LENGTHH=2,<  

4168 005039* 000000 000003      59860 CPI 311 IIS IT A STRING ?  

4169 005040* 001000 000003      5988012 PUSH PSW13 ISAVE THE TYPE INFORMATION  

4170 005041* 001000 000365      59900 JNZ NUMINS>14 IF NUMERIC, USE FIN TO GET IT  

4171 005042* 001000 000302      5992015  

4172 005043* 000000 005070*  

4173 005044* 000000 005026*  

4174 005045* 001000 000327      59920 IFN LENGTHH=2,<  

4175 005046* 001000 000127      59940 DRA A16  

4176 005047* 001000 000107      59960 JZ NUMINS>17 INPUT A NUMBER IF NUMERIC  

4177 005048* 001000 000376      5998018 ONLY THE VARIABLE TYPE IS  

4178 005049* 001000 000402      60000 CHECKED SO AN UNQUOTED STRING  

4179 005050* 001000 000312      60020 SCAN CAN BE ALL DIGITS  

4180 005051* 001000 000327      60040 CHRGET19  

4181 005052* 001000 000127      60060 MOV D,A20 IASSUME QUOTED STRING  

4182 005054* 001000 000107      60080 MOV B,A21 ISETUP TERMINATORS  

4183 005055* 001000 000376      60100 CPI 3422 IQUOTE ?  

4184 005056* 001000 000402      60120 JZ NOWGET23 ITERMINATORS OK  

4185 005057* 001000 000553*  

4186 005058* 000000 005053*  

4187 005059* 000000 005034*  

4188 005060* 001000 000026      60140 MVI D,""24 IUNQUOTED STRING TERMINATORS  

4189 005061* 000000 00007225  

4190 005062* 001000 00000626  

4191 005063* 000000 00005427  

4192 005064* 000000 00005328  

4193 005065* 001000 00005329  

4194 005066* 000000 00005330  

4195 005067* 001000 00005331  

4196 005068* 001000 00031532  

4197 005069* 000000 007643*33  

4198 005070* 000000 005044*  

4199 005071* 000000 005044*  

4200 005072* 001000 00005334  

4201 005073* 000000 005044*  

4202 005074* 001000 00030335  

4203 005075* 001000 000556*36  

4204 005076* 000000 005076*  

4205 005077* 000000 005077*  

4206 005078* 001000 00005337  

4207 005079* 001000 00052738  

4208 005080* 001000 00051239  

4209 005081* 000000 005111*40  

4210 005082* 000000 005077*41  

4211 005083* 001000 00032742  

4212 005084* 001000 00031543  

4213 005085* 000000 000000*44  

4214 005086* 000000 005066*45  

4215 005087* 000000 005076*46  

4216 005088* 000000 005076*47  

4217 005089* 001000 00055348  

4218 005090* 001000 00052749  

4219 005091* 001000 00051250  

4220 005092* 000000 005111*51  

4221 005093* 000000 005075*52  

4222 005094* 000000 000054*53  

4223 005095* 000000 004667*54  

4224 005096* 000000 005107*55  

4225 005097* 000000 005107*56  

4226 005098* 001000 00055357  

4227 005099* 001000 00052758  

4228 005100* 001000 00051259  

4229 005101* 000000 005111*60  

4230 005102* 000000 005075*61  

4231 005103* 001000 00037662  

4232 005104* 000000 000054*63  

4233 005105* 001000 00030264  

4234 005106* 001000 004667*65  

4235 005107* 000000 005107*66  

4236 005108* 001000 00034367  

4237 005109* 001000 00055368  

4238 005110* 001000 000532*69  

4239 005111* 001000 000502*70  

4240 005112* 000000 004773*71  

4241 005113* 000000 005107*72  

4242 005114* 000000 005107*73  

4243 005115* 000000 005107*74  

4244 005116* 000000 005107*75  

4245 005117* 001000 00032176  

4246 005118* 001000 00007277  

4247 005119* 001000 001682*78  

4248 005120* 000000 005115*79  

4249 005121* 001000 00026780  

4250 005122* 001000 00035381  

4251 005123* 001000 00030282  

4252 005124* 001000 00035383  

4253 005125* 001000 00030284  


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BASIC MCS 8080 GATES/ALLEN/DAVIDOFF F3 MAC 6=SEP=64 05111 INPUT AND READ CODE

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4254 005126* 001000 000076      60280 DDASIG: POP PSW>85 IPOP OFF THE TYPE INFORMATION  

4255 005127* 001000 000353      60300 XCHG86  

4256 005128* 001000 000041      60320 LXI H,STRDN287 IRETURN LOC  

4257 005129* 000000 005077*88  

4258 005130* 000000 005054*89  

4259 005131* 000000 005062*90  

4260 005132* 000000 005054*91  

4261 005133* 001000 00034392  

4262 005134* 001000 00032593  

4263 005135* 001000 00030394  

4264 005136* 000000 004157*95  

4265 005137* 000000 005061*96  

4266 005138* 001000 00034397  

4267 005139* 001000 00032598  

4268 005140* 001000 00030399  

4269 005141* 000000 004157*100  

4270 005142* 001000 000327101  

4271 005143* 001000 000315102  

4272 005144* 000000 005061*103  

4273 005145* 001000 000315104  

4274 005146* 000000 005072*105  

4275 005147* 000000 005066*106  

4276 005148* 000000 005066*107  

4277 005149* 001000 000343108  

4278 005150* 001000 000325109  

4279 005151* 001000 000303110  

4280 005152* 000000 004157*111  

4281 005153* 000000 005061*112  

4282 005154* 001000 000343113  

4283 005155* 001000 000325114  

4284 005156* 001000 000303115  

4285 005157* 000000 004157*116  

4286 005158* 001000 000327117  

4287 005159* 001000 000315118  

4288 005160* 000000 005061*119  

4289 005161* 001000 000315120  

4290 005162* 000000 005072*121  

4291 005163* 001000 000302122  

4292 005164* 000000 005066*123  

4293 005165* 001000 000302124  

4294 005166* 000000 005107*125  

4295 005167* 001000 000321126  

4296 005168* 001000 000072127  

4297 005169* 001000 001682*128  

4298 005170* 000000 005115*129  

4299 005171* 001000 000267130  

4300 005172* 001000 000353131  

4301 005173* 001000 000302132  

4302 005174* 000000 005107*133  

4303 005175* 001000 000321134  

4304 005176* 001000 000072135  

4305 005177* 001000 001682*136  

4306 005178* 000000 005115*137  

4307 005179* 001000 000267138  

4308 005180* 001000 000353139  

4309 005181* 001000 000302140  

4310 005182* 000000 005107*141  

4311 005183* 001000 000321142  

4312 005184* 001000 000072143  

4313 005185* 001000 001682*144  

4314 005186* 000000 005115*145  

4315 005187* 001000 000267146  

4316 005188* 001000 000353147  

4317 005189* 001000 000302148  

4318 005190* 000000 005107*149  

4319 005191* 001000 000321150  

4320 005192* 001000 000072151  

4321 005193* 001000 001682*152  

4322 005194* 000000 005115*153  

4323 005195* 001000 000267154  

4324 005196* 001000 000353155  

4325 005197* 001000 000302156  

4326 005198* 000000 005107*157  

4327 005199* 001000 000321158  

4328 005200* 001000 000072159  

4329 005201* 001000 001682*160  

4330 005202* 000000 005115*161  

4331 005203* 001000 000267162  

4332 005204* 001000 000353163  

4333 005205* 001000 000302164  

4334 005206* 000000 005107*165  

4335 005207* 001000 000321166  

4336 005208* 001000 000072167  

4337 005209* 001000 001682*168  

4338 005210* 000000 005115*169  

4339 005211* 001000 000267170  

4340 005212* 001000 000353171  

4341 005213* 001000 000302172  

4342 005214* 000000 005107*173  

4343 005215* 001000 000321174  

4344 005216* 001000 000072175  

4345 005217* 001000 001682*176  

4346 005218* 000000 005115*177  

4347 005219* 001000 000267178  

4348 005220* 001000 000353179  

4349 005221* 001000 000302180  

4350 005222* 000000 005107*181  

4351 005223* 001000 000321182  

4352 005224* 001000 000072183  

4353 005225* 001000 001682*184  

4354 005226* 000000 005115*185  

4355 005227* 001000 000267186  

4356 005228* 001000 000353187  

4357 005229* 001000 000302188  

4358 005230* 000000 005107*189  

4359 005231* 001000 000321190  

4360 005232* 001000 000072191  

4361 005233* 001000 001682*192  

4362 005234* 000000 005115*193  

4363 005235* 001000 000267194  

4364 005236* 001000 000353195  

4365 005237* 001000 000302196  

4366 005238* 000000 005107*197  

4367 005239* 001000 000321198  

4368 005240* 001000 000072199  

4369 005241* 001000 001682*200  

4370 005242* 000000 005115*201  

4371 005243* 001000 000267202  

4372 005244* 001000 000353203  

4373 005245* 001000 000302204  

4374 005246* 000000 005107*205  

4375 005247* 001000 000321206  

4376 005248* 001000 000072207  

4377 005249* 001000 001682*208  

4378 005250* 000000 005115*209  

4379 005251* 001000 000267210  

4380 005252* 001000 000353211  

4381 005253* 001000 000302212  

4382 005254* 000000 005107*213  

4383 005255* 001000 000321214  

4384 005256* 001000 000072215  

4385 005257* 001000 001682*216  

4386 005258* 000000 005115*217  

4387 005259* 001000 000267218  

4388 005260* 001000 000353219  

4389 005261* 001000 000302220  

4390 005262* 000000 005107*221  

4391 005263* 001000 000321222  

4392 005264* 001000 000072223  

4393 005265* 001000 001682*224  

4394 005266* 000000 005115*225  

4395 005267* 001000 000267226  

4396 005268* 001000 000353227  

4397 005269* 001000 000302228  

4398 005270* 000000 005107*229  

4399 005271* 001000 000321230  

4400 005272* 001000 000072231  

4401 005273* 001000 001682*232  

4402 005274* 000000 005115*233  

4403 005275* 001000 000267234  

4404 005276* 001000 000353235  

4405 005277* 001000 000302236  

4406 005278* 000000 005107*237  

4407 005279* 001000 000321238  

4408 005280* 001000 000072239  

4409 005281* 001000 001682*240  

4410 005282* 000000 005115*241  

4411 005283* 001000 000267242  

4412 005284* 001000 000353243  

4413 005285* 001000 000302244  

4414 005286* 000000 005107*245  

4415 005287* 001000 000321246  

4416 005288* 001000 000072247  

4417 005289* 001000 001682*248  

4418 005290* 000000 005115*249  

4419 005291* 001000 000267250  

4420 005292* 001000 000353251  

4421 005293* 001000 000302252  

4422 005294* 000000 005107*253  

4423 005295* 001000 000321254  

4424 005296* 001000 000072255  

4425 005297* 001000 001682*256  

4426 005298* 000000 005115*257  

4427 005299* 001000 000267258  

4428 005300* 001000 000353259  

4429 005301* 001000 000302260  

4430 005302* 000000 005107*261  

4431 005303* 001000 000321262  

4432 005304* 001000 000072263  

4433 005305* 001000 001682*264  

4434 005306* 000000 005115*265  

4435 005307* 001000 000267266  

4436 005308* 001000 000353267  

4437 005309* 001000 000302268  

4438 005310* 000000 005107*269  

4439 005311* 001000 000321270  

4440 005312* 001000 000072271  

4441 005313* 001000 001682*272  

4442 005314* 000000 005115*273  

4443 005315* 001000 000267274  

4444 005316* 001000 000353275  

4445 005317* 001000 000302276  

4446 005318* 000000 005107*277  

4447 005319* 001000 000321278  

4448 005320* 001000 000072279  

4449 005321* 001000 001682*280  

4450 005322* 000000 005115*281  

4451 005323* 001000 000267282  

4452 005324* 001000 000353283  

4453 005325* 001000 000302284  

4454 005326* 000000 005107*285  

4455 005327* 001000 000321286  

4456 005328* 001000 000072287  

4457 005329* 001000 001682*288  

4458 005330* 000000 005115*289  

4459 005331* 001000 000267290  

4460 005332* 001000 000353291  

4461 005333* 001000 000302292  

4462 005334* 000000 005107*293  

4463 005335* 001000 000321294  

4464 005336* 001000 000072295  

4465 005337* 001000 001682*296  

4466 005338* 000000 005115*297  

4467 
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BASIC MCS 8000 GATES/ALLEN/DAVIDOFF      MACRO 4/11(13) 83112 10=SEP=75 PAGE 18-5
F3          MAC 6=SEP=64 03:11           INPUT AND READ CODE

4254 005126† 000000 003455†
4255 005127† 000000 005121†
4256
4257 005130† 001000 00266†
4258
4259 005131† 001000 000041
4260 005132† 000000 005142†
4261 005133† 000000 005126†
4262 005134† 001000 000025
4263 005135† 001000 000304
4264 005136† 000000 007743†
4265 005137† 000000 005132†
4266 005140† 001000 000341
4267 005141† 001000 000011
4268 005142† 000000 000071
4269 005143† 000000 000105
4270 005144† 000000 000130
4271 005145† 000000 000124
4272 005146† 000000 000122
4273 005147† 000000 000101
4274 005150† 000000 000049
4275 005151† 000000 000049
4276 005152† 000000 000107
4277 005153† 000000 000116
4278 005154† 000000 000117
4279 005155† 000000 000122
4280 005156† 000000 000105
4281 005157† 000000 000104
4282 005157† 000000 000304
4283 005160† 000000 000015
4284 005161† 000000 000012
4285 005162† 000000 000008
4286
4287
4288
4289
4290
4291
4292
4293
4294
4295
4296
4297
4298 005163† 001000 000051
4299 005164† 000000 004072†
4300 005165† 000000 005136†
4301
4302 005166† 000000 000051
4303 005167† 001000 000267
4304 005167† 001000 000303
4305 005170† 000000 005154†
4306 005171† 000000 005154†

61020 IFN LENGTH,<
61040 DRA M ;COULD HAVE ENDED WITH COMMA OR
61060 ;COLON, BUT SHOULD BE A ZERO
61080 LXI H,EXIINT ;TEXT FOR "EXTRA"
61100 PUSH D ;SAVE THE TEXT POINTER
61120 CNZ STROUT ;IF WASN'T REAL END SAY SOMETHING
61140 POP H ;GET BACK THE TEXT POINTER
61160 RET
61180 EXIINT: DCZEXTRA IGNORED""

61200 ACRLF
61220 B>
61240 ; SURROUNTI TO FIND DATA
61260 ; IN THE 4K "DATA" MUST BE AT THE START OF THE LINE
61280 ; SO THE SEARCH IS MADE USING THE LINKS AT THE START OF EACH LINE.
61300 ;
61320 ;
61340 ; IN THE 8K AND EXTENDED THE SEARCH IS MADE BY USING THE EXECUTION COO
61360 ; FOR DATA TO SKIP OVER STATEMENTS, THE STAR WORD OF EACH STATEMENT
61380 ; IS STORED IN THE DATA LINKS AT THE START OF EACH LINE NUMBER.
61400 ; IS STORED IN DATLIN SO THAT IF AN ERROR OCCURS WHILE READING
61420 ; DATA THE ERROR MESSAGE WILL GIVE THE LINE NUMBER OF THE
61440 ; ILL-FORMATTED DATA
61460 ;
61480 DATLDP: IFN LENGTH,<CALL DATA>
61500 IFE LENGTH,<POP H>
61520 DATFND: INN LENGTH,<
61540 DRA A
61560 JNZ NOHLIN>


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BASIC MLS 8000 GATES/ALLEN/DAVIDOFF      MACHO 47 (173) 25112 10-SEP-75 PAGE 16-6
F3      MAC      6-SEP=64 05111      INPUT AND READ CODE

4307    005175* 001000 000043      61580  IFN LENGTH,<
4308    005175* 001000 000057      61580  INX H>           ISAVE POINTER TO THE NEXT STATEMENT
4309    005175* 001000 000267      61580  PUSHN H
4310    005174* 001000 000171      61580  MOV A,C           ISEE IF WE ARE AT THE END
4311    005175* 001000 000260      61680  OKA B
4312    005176* 001000 000036      61680  MVI E,ERRRD     IND DATA IS ERROR ERRO
4313    005177* 000000 000004      61680  E,ERRRD
4314    005200* 001000 000512      61700  JZ   ERROR       JIF SO COMPLAIN
4315    005201* 000000 002102*     61700  JZ   ERROR       JIF SO COMPLAIN
4316    005202* 000000 005176*     61700  JZ   ERROR       JIF SO COMPLAIN
4317    005203* 001000 000301      61720  IFE LENGTH,<INX H>  JSKIP PAST LINE #
4318    005204* 001000 000136      61740  IFN LENGTH,<POP B>  IGET DATA LINE #
4319    005205* 001000 000043      61760  MOV E,M           JIS IS "DATA"?
4320    005206* 001000 000126      61780  INX H
4321    005207* 001000 000353      61800  MOV D,M           JIS IS "DATA"?
4322    005208* 001000 000210      61820  XCHG
4323    005209* 001000 000210      61840  SHLD DATLIN
4324    005210* 000000 001577*     61840  SHLD DATLIN
4325    005211* 000000 005201*     61860  XCHG>             JESTORE TEXT POINTER
4326    005213* 001000 000353      61880  NOWLNL CBRGET     IGET THE STATEMENT TYPE
4327    005214* 001000 000327      61880  CPI DATBK        JIS IS "DATA"?
4328    005215* 001000 000376      61900  CPI DATBK
4329    005216* 000000 000203      61920  JNZ DATLP        JNOT DATA SO LOOK SOME MORE
4330    005217* 001000 000362      61920  JNZ DATLP
4331    005220* 000000 005163*     61940  IFE LENGTH,<POP B>  JCONTINUE READING
4332    005221* 000000 005111*     61940  IFE LENGTH,<POP B>  JCONTINUE READING
4333    005222* 001000 000303      61960  JMP DATBK
4335    005223* 000000 005025*     61960  JMP DATBK
4336    005224* 000000 005220*     61960  JMP DATBK
4337
4338
4339
4340

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BASIC MCS 8080 GATES/ALLEN/DAVIDUFF  
F3 MAC 6-SEP-64 05111

MACRO 47(113) 03:12 10-SEP-75 PAGE 19  
NEXT CODE

4341 62260 SUBTTL NEXT CODE  
4342 62260 ;  
4343 62100 ; NOTE:  
4344 62120 ;  
4345 62140 ;  
4346 62160 ; A FOR ENTRY ON THE STACK HAS THE FOLLOWING FORMAT:  
4347 62180 ;  
4348 62200 ;  
4349 62220 ; LOW ADDRESS  
4350 62240 ; TOKEN (FORTK IN HIGH BYTE) 1 BYTES  
4351 62260 ; A POINTER TO THE LOOP VARIABLE 2 BYTES  
4352 62280 ; A SIGN REFLECTING THE SIGN OF THE INCREMENT 1 BYTE  
4353 62300 ; THE STEP 2 BYTES  
4354 62320 ; THE UPPER VALUE 4 BYTES  
4355 62340 ; THE LINE # OF THE "FOR" STATEMENT 2 BYTES  
4356 62360 ; A TEXT POINTER INTO THE "FOR" STATEMENT 2 BYTES  
4357 62380 ; HIGH ADDRESS  
4358 62400 ;  
4359 62420 ; TOTAL 16 BYTES  
4360 62440 ;  
4361 62460 NEXT:  
4362 62480 IFN LENGTH,<LXI D,SCODE>#FROM THE "NEXT"  
4363 62480 005225\* 001000 000021  
4364 62480 005226\* 000000 000000\*  
4365 62480 005227\* 000000 005223\*  
4366 62500 ;STATEMENT WITHOUT ANY ARGS  
4367 62520 ;THE CALL FNDFOR WITH {D,E}#0  
4368 62540 NEXTC:  
4369 62560 IFE LENGTH,<  
4370 62580 CALL PTRGET> ;MUST HAVE A VARIABLE  
4371 62600 IFN LENGTH,<  
4372 62620 CNZ PTRGET> ;GET A POINTER TO THE  
4373 62620 005230\* 001000 000504  
4374 62640 005231\* 000000 000505\*  
4375 62660 005232\* 000000 005226\*  
4376 62680 SHLD TEMP ;LOOP VARIABLE INTO {D,E}  
4377 62700 005233\* 001000 000042 ;PUT THE TEXT POINTER  
4378 62720 005234\* 000000 001603\*  
4379 62740 005235\* 000000 005231\*  
4380 62760 ;IN A TEMP LOCATION  
4381 62780 005236\* 001000 000515 ;IN CASE THE LOOP TERMINATES  
4382 62800 005237\* 000000 001744\* ;TRY TO FIND A FOR ENTRY  
4383 62820 ;ON THE STACK WHOSE VARIABLE NAME  
4384 62840 ;MATCHES THIS ONES  
4385 62860 IFN LENGTH,<  
4386 62880 JNZ NFERR> ;NEXT WITHOUT FOR"  
4387 62880 005241\* 001000 000302  
4388 62880 005242\* 000000 002100\*  
4389 62880 005243\* 000000 005237\*  
4390 62880 005244\* 001000 000371  
4391 62880 005245\* 001000 000325  
4392 62880 005246\* 001000 000176  
4393 62880 005247\* 001000 000043  
62900 ;SETUP STACK POINTER BY CHOPPING  
62920 PUSH PSW ;PUT THE POINTER TO THE LOOP  
62940 PUSH D ;VARIABLE ONTO THE STACK  
62960 ;  
62980 IFE LENGTH,<  
62980 MV1 E,ERRNF ;PUT THE POINTER TO THE LOOP  
63000 JNZ ENROR> ;VARIABLE ONTO THE STACK  
63020 CALL MOVFM ;STEP VALUE INTO THE FAC  
63040 ;  
63060 XTHL ;PUT THE POINTER INTO THE  
63080 IFE ENTRY ONTO THE STACK  
63100 PUSH H ;PUT THE POINTER TO THE LOOP  
63120 ;VARIABLE BACK ONTO THE STACK  
63140 CALL FA00S ;ADD THE STEP AND LOOP VARIABLE  
63160 POP H ;POP OFF THE POINTER TO  
63180 IFE LOOP VARIABLE  
63200 CALL MOVM ;MOV FAC INTO LOOP VARIABLE  
63220 ;  
63240 POP H ;GET THE ENTRY POINTER  
63240 CALL MOVRM ;GET THE FINAL INTO THE REGISTERS  
63260 PUSH H ;SAVE THE ENTRY POINTER  
63280 CALL FCMP ;COMPARE THE NUMBERS  
63300 POP H ;  
63320 POP B ;  
63340 SUB B ;  
63360 ;  
63380 CALL MOVRM ;  
63400 ;  
63420 JZ LOOPDN ;GET TEXT POINTER OF "FOR" INTO {B,C}  
63420 ;IF SIGN(PINL-CURRENT)\*SIGN(STEP) #0  
63440 ;  
63450 ;THEN THE LOOP IS FINISHED  
63460 XCHG SHLD CURLIN ;STORE THE LINE #  
63480 ;  
63500 MOV L,C ;SETUP THE TEXT POINTER  
63520 MOV H,B  
63540 JMP NXTCNN  
63560 ;  
63580 LOOPDN: SPHL ;ELIMINATE THE FOR ENTRY  
63600 ;SINCE {H,L} MOVED ALL

BASIC MCS 8080 GATES/ALLEN/DAVIDUFF  
F3 MAC 6-SEP-64 05111

MACRO 47(113) 03:12 10-SEP-75 PAGE 19-1  
NEXT CODE

4394 62920 PUSH PSW ;PUT THE POINTER TO THE LOOP  
4395 62940 PUSH D ;VARIABLE ONTO THE STACK  
4396 62960 ;  
4397 62980 IFE LENGTH,<  
4398 62980 MV1 E,ERRNF ;PUT THE POINTER TO THE LOOP  
4399 63000 JNZ ENROR> ;VARIABLE ONTO THE STACK  
63020 CALL MOVFM ;STEP VALUE INTO THE FAC  
63040 ;  
63060 XTHL ;PUT THE POINTER INTO THE  
63080 IFE ENTRY ONTO THE STACK  
63100 PUSH H ;PUT THE POINTER TO THE LOOP  
63120 ;VARIABLE BACK ONTO THE STACK  
63140 CALL FA00S ;ADD THE STEP AND LOOP VARIABLE  
63160 POP H ;POP OFF THE POINTER TO  
63180 IFE LOOP VARIABLE  
63200 CALL MOVM ;MOV FAC INTO LOOP VARIABLE  
63220 ;  
63240 POP H ;GET THE ENTRY POINTER  
63240 CALL MOVRM ;GET THE FINAL INTO THE REGISTERS  
63260 PUSH H ;SAVE THE ENTRY POINTER  
63280 CALL FCMP ;COMPARE THE NUMBERS  
63300 POP H ;  
63320 POP B ;  
63340 SUB B ;  
63360 ;  
63380 CALL MOVRM ;  
63400 ;  
63420 JZ LOOPDN ;GET TEXT POINTER OF "FOR" INTO {B,C}  
63420 ;IF SIGN(PINL-CURRENT)\*SIGN(STEP) #0  
63440 ;  
63450 ;THEN THE LOOP IS FINISHED  
63460 XCHG SHLD CURLIN ;STORE THE LINE #  
63480 ;  
63500 MOV L,C ;SETUP THE TEXT POINTER  
63520 MOV H,B  
63540 JMP NXTCNN  
63560 ;  
63580 LOOPDN: SPHL ;ELIMINATE THE FOR ENTRY  
63600 ;SINCE {H,L} MOVED ALL

BASIC MCS 8080 GATES/ALLEN/DAVIDUFF MACHO 47(113) 03:12 10=SEP=75 PAGE 19=2  
F3 MAC 6=SEP=64 03#111 NEXT CODE

4447 63620 ;THE WAY DOWN THE ENTRY  
4448 005321# 001000 000052 LHLD TEMP RESTORE THE TEXT POINTER  
4449 005322# 000000 001603#  
4450 005323# 000000 005316#  
4451 63660 IFE LENGTH,<JMP NEWSTT>  
4452 63680 IFN LENGTH,<  
4453 005324# 001000 000176 63700 MOV A,M JIS THERE A COMMA AT THE END  
4454 005325# 001000 000376 63720 CPI 44 JIF SO LOOK AT ANOTHER  
4455 005326# 000000 000054  
4456 005327# 001000 000302 63740 JNZ NEWSTT JVARIABLE NAME TO "NEXT"  
4457 005330# 000000 005302#  
4458 005331# 001000 000327 63760 CHRGET READ FIRST CHARACTER  
4459 005332# 001000 000327 CALL NEXTC> JDO NEXT, BUT DON'T ALLOW  
4460 005333# 001000 000315  
4461 005334# 000000 005230#  
4462 005335# 000000 005330#  
4463 63800 ;BLANK VARIABLE NAME [D,E]=STK PTR  
4464 63820 ;AND WILL NEVER MATCH ANY VARPTR  
4465 63840 ;USE CALL TO PUT DUMMY "NEWSTT" ENTRY ON  
4466  
4467 63880 PAGE

BASIC MCS 8080 GATES/ALLEN/DAVIDUFF MACHO 47(113) 03:12 10=SEP=75 PAGE 20  
F3 MAC 6=SEP=64 03#111 NEXT CODE

4468  
4469

BASIC MCS 8080 GATES/ALLEN/DAVIDOFF  
F3 MAC 6-SEP-64 05111

MACHO 47(113) 03:12 10-SEP-75 PAGE 21  
FORMULA EVALUATION CODE

4470 00020 SUBTTL FORMULA EVALUATION CODE  
4471  
4472 00060 IFN LENGTH=2,<  
4473 00060 IFN STRING,<  
4474 ;  
4475 ; THESE ROUTINES CHECK FOR A CERTAIN VALTYP  
4476 ; (A) IS NOT PRESERVED  
4477 ;  
4478 00160 ;  
4479 00180 FRMNUM: CALL FRMEVL J>EVALUATE A FORMULA  
4480 CHKNU: XHD "01000,-0366 ITURN CARRY OFF WITH ORI  
4481 CSKTR: STC JSET CARRY  
4482 CRVLT: LDA VALTYP JTYPE I MEANS STRING  
4483 AUC A JRESULT SHOULD BE 0 OR 3  
4484 00240 RPE JBAD RESULTS ARE 2 AND 1  
4485 00280 TMERR: MVI E,ERRTH JRETURN IF CORRECT RESULT  
4486 00320 00340 JMP ERROR>>  
4487 ;  
4488 ; THE FORMULA EVALUATOR STARTS WITH  
4489 ; [M,L] POINTING TO THE FIRST CHARACTER OF THE FORMULA,  
4490 ; AT THE END [R,L] POINTS TO THE TERMINATOR,  
4491 ; THE RESULT IS LEFT IN THE FAC,  
4492 ;  
4493 ; THE FORMULA EVALUATOR USES THE OPERATOR TABLE (OPTAB)  
4494 ; TO DETERMINE PRECEDENCE AND DISPATCH ADDRESSES FOR  
4495 ; EACH OPERATOR,  
4496 ; A TEMPORARY RESULT ON THE STACK HAS THE FOLLOWING FORMAT  
4497 ;  
4498 ; THE ADDRESS OF \*RETAOP -- THE PLACE TO RETURN ON COMPLETION  
4499 ; OF OPERATOR APPLICATION  
4500 ;  
4501 ; THE FLOATING POINT TEMPORARY RESULT  
4502 ;  
4503 ; THE ADDRESS OF THE OPERATOR ROUTINE  
4504 ;  
4505 ; THE PRECEDENCE OF THE OPERATOR  
4506 ;  
4507 ; TOTAL 10 BYTES  
4508 ;  
4509 005356\* 001000 000053 IFE STRING,<FRMNUM:>  
4510 005337\* 001000 000026 00820 FRMEVL: DCX H JBACK UP CHARACTER POINTER  
4511 005337\* 001000 000026 00840 FRMCHK: MVI D,B JINITIAL DUMMY PRECEDENCE IS 0  
4512 005340\* 000000 000000  
4513 005341\* 001000 000325 00860 LPOPER: PUSH D JSAVE PRECEDENCE  
4514 005342\* 001000 000315 00880 CALL GETSTK JMAKE SURE THERE IS ROOM FOR RECURSIVE CALLS  
4515 005343\* 000000 002024\*  
4516 005343\* 000000 005334\*  
4517 005343\* 000000 000001 00900 1  
4518 005346\* 001000 000315 00920 CALL EVAL JEVALUATE SOMETHING  
4519 005347\* 000000 006001\*  
4520 005350\* 000000 005343\*  
4521 005351\* 001000 000042 00940 SHLD TEMP2 JSAVE TEXT POINTER  
4522 005352\* 000000 001605\*

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4523 005353\* 000000 005347\* 00960 RETAOP: LHLD TEMP2 JRESTORE TEXT PTR  
4524 005354\* 001000 000052  
4525 005355\* 000000 001605\*  
4526 005356\* 000000 005352\*  
4527 005357\* 001000 000301 00980 TSTOP: POP B JPOP OFF THE PRECEDENCE OF OLDOP  
4528 01000 IFN LENGTH=2,<  
4529 ;  
4530 01040 IFN STRING,<  
4531 01060 CPI 120 JLOOK AT PRECEDENCE  
4532 01100 CPI 120 JIF ITS SOME ARITHMETIC  
4533 01140 CPI 120 JTYPE THING WE SHOULDN'T  
4534 01180 CPI 120 JSEE STRINGS  
4535 01200 CNC CHNNUH>> JTYPE MISMATCH ERROR IF NOT NUMERIC  
4536 005360\* 001000 000176 01140 NOTSTV: MOV A,M JGET NEXT CHARACTER  
4537 005361\* 001000 000026 01180 MVI D,B JASSUME NO RELATION OPS  
4538 005362\* 000000 000000  
4539 005363\* 001000 000326 01200 LUPREL: SUI GREATK JIS THIS ONE RELATION?  
4540 005364\* 000000 000257 01220 JC ENDREL JRELATIONS ALL THROUGH  
4541 005365\* 001000 000332 01240 NMREL==LESSTK=GREATK+1 JIS IT REALLY RELATIONAL?  
4542 005366\* 000000 00015\*  
4543 005367\* 000000 000003 01260 CPI NMREL JNO JUST BIG  
4544 005367\* 000000 005355\*  
4545 005370\* 001000 000376 01300 CPI 1 JSET UP BITS BY MAPPING  
4546 005371\* 001000 000001 01320 RAL 10 TO 1 1 TO 2 AND 2 TO 4  
4547 005371\* 001000 000003 01340 XRA D JBRING IN THE OLD BITS  
4548 005371\* 001000 000005 01360 CMP D JMAKE SURE RESULT IS BIGGER  
4549 005372\* 001000 000322 01380 MOV D,A JSAVE THE MASK  
4550 005373\* 000000 005415\* 01400 JC SNERR JDON'T ALLOW THU OF THE SAME  
4551 005374\* 000000 005366\*  
4552 005375\* 001000 000001 01420 SHLD TEMP3 JSAVE CHARACTER POINTER  
4553 005377\* 001000 000027 01520 RAL 10 TO 1 1 TO 2 AND 2 TO 4  
4554 005400\* 001000 000256 01540 XRA D JBRING IN THE OLD BITS  
4555 005491\* 001000 000272 01560 CMP D JMAKE SURE RESULT IS BIGGER  
4556 005492\* 001000 000127 01580 MOV D,A JSAVE THE MASK  
4557 005493\* 001000 000353 01400 JC SNERR JDON'T ALLOW THU OF THE SAME  
4558 005494\* 000000 002672\*  
4559 005495\* 000000 005373\*  
4560 005496\* 001000 000001 01420 SHLD TEMP3 JSAVE CHARACTER POINTER  
4561 005497\* 001000 001575\* 01440 CHRGET JGET THE NEXT CANDIDATE  
4562 005497\* 001000 0005404\* 01460 JMP LUPREL  
4563 005412\* 001000 000305 01480  
4564 005413\* 000000 005363\*  
4565 005414\* 000000 005407\*  
4566 005415\* 001000 000257 01480 ENDREL: MOV A,D JGET THE MASK  
4567 005415\* 001000 000257 01500 ORA A JHERE THERE ANY?  
4568 005415\* 001000 000252 01520 JNZ FINREL JIF SO, HANDLE AS SPECIAL OP  
4569 005420\* 001000 005605\*  
4570 005421\* 001000 005413\*  
4571 005422\* 001000 0008176 01540 MOV A,M JGET THE CHARACTER AGAIN  
4572 005423\* 001000 000042 01560 SHLD TEMP3> JSAVE UPDATED CHARACTER POINTER  
4573 005424\* 000000 001575\*  
4574 005425\* 000000 005426\*  
4575 005426\* 001000 000326 01580 SUI PLUSTK JAN OPERATOR?

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4576 005427<sup>f</sup> 001000 000250  
 4577 005430<sup>f</sup> 001000 000530  
 4578  
 4579 005431<sup>f</sup> 001000 000376  
 4581 005432<sup>f</sup> 000000 000007  
 4582 005433<sup>f</sup> 001000 000320  
 4583 005434<sup>f</sup> 001000 000137  
 4584  
 4585 005435<sup>f</sup> 001000 000072  
 4587 005436<sup>f</sup> 000000 001543<sup>f</sup>  
 4588 005437<sup>f</sup> 000000 005424<sup>f</sup>  
 4589  
 4590 005440<sup>f</sup> 001000 000376  
 4591 005441<sup>f</sup> 000000 000003  
 4592  
 4593 005442<sup>f</sup> 001000 000263  
 4594  
 4595 005443<sup>f</sup> 001000 000312  
 4596 005444<sup>f</sup> 000000 010520<sup>f</sup>  
 4597 005445<sup>f</sup> 000000 005436<sup>f</sup>  
 4600  
 4601 01780 IFE LENGTH=2,<  
 01780 CPI 3> JSEE IF ITS A STRING  
 4602 01800 RNC JRETURN IF NOT  
 4603 01800 CPI LSTUPK IT THIS CAN RESULT IN OPERATOR  
 4604 01800 MOV E,A APPLICATION OR ACTUAL RETURN  
 4605 01800 IFN STRING,< HIGHER THAN THE LAST OP?  
 01780 LDA VALTYP  
 4606 01780 IFE LENGTH=2,<  
 01780 CPI 3> JSEE IF ITS A STRING  
 4607 01800 RNC JRETURN IF NOT  
 4608 01800 CPI LSTUPK IT THIS CAN RESULT IN OPERATOR  
 4609 01800 MOV E,A APPLICATION OR ACTUAL RETURN  
 4610 01800 IFN LENGTH=2,<  
 01800 DCR A> JSET CONDITION CODES  
 4611 01800 ADD E  
 01800 MOV E,A>  
 4612 01800 IFN LENGTH=2,<  
 01800 DCR E  
 01800 ADD E>  
 4613 01800 MOV E,A> JREFETCH DP+VALUE  
 4614 01900 JZ CAT> JMUST BE CAT  
 4615 01940 IFN LENGTH=2,<  
 01940 RLC JADD IN ORIGINAL A#2  
 01980 ADD E JADD IN ORIGINAL A  
 02000 MOV E,A> JCREATE TWO BYTE VALUE  
 4616 02020 IFE LENGTH,<  
 02020 CPI 0 JHIGH ORDER #0  
 4617 02060 LXI H,OPTAB JCREATE INDEX INTO OPTAB  
 4618 02080 DAD D JADD IN CALCULATED OFFSET  
 02100 MOV A,B JTAJ SETS OLD PRECEDENCE  
 4619 02100 MOV D,M JPREPARE NEW PRECEDENCE  
 4620 02100 CPI D JOLD=NEW  
 4621 02140 RNC JMUST APPLY OLD OP  
 4622 02180 IFN LENGTH=2,<  
 02180 INX H JIF HAS GREATER OR = PRECEDENCE  
 4623 02220 CPI STRING,<CALL CHKNUH> JNOW POINTING AT ROUTINE ADDRESS  
 4624 02240 IFN LENGTH=2,<CALL CHKNUH> JCAN'T BE STRING HERE  
 4625 02280 JSEE THE ONLY STRING OPERATOR  
 4626 02280 IFN LENGTH=2,<CALL CHKNUH> JIF JUST ONE OF THE DETAILS  
 4627 02280 DUPREC: PUSH B JDON'T COME THROUGH HERE  
 4628 02320 DUPREC: PUSH B,RETADP JSAVE OLD PRECEDENCE  
 4629 02360 PUSH B JOPERATOR RETURN ADDRESS  
 4630 02380 IFN LENGTH,<  
 02380 LXI B,RETADP JFIRST PART OF "TEMP" ENTRY  
 4631 02400 MOV B,E> JSAVE SECOND BYTE OF PRECEDENCE  
 4632 02420 IFE LENGTH,< JSINCE FOR RELATIONAL OPERATORS  
 4633 02440 MOV B,E> JIT GIVES THE VALUE TYPE OF  
 4634 02460 IFE LENGTH,< JTHE LEFT SIDE AND IT TELLS  
 4635

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4636 FORMULA EVALUATION CODE  
 4637  
 4638 02480 WHICH RELATIONAL-OPERATOR  
 4639 IT WAS  
 4640 02500  
 4641 02520 MOV C,0  
 4642 02540 CALL PUSHF  
 4643 02560 IFN LENGTH,<  
 4644 02580 MOV E,B> JGET SECOND BYTE OF PRECEDENCE AGAIN  
 4645 02600 MOV D,C J(D) GETS PRECEDENCE  
 4646 02620 PUSHM D,C INPUT ROUTINE ADDRESS ON THE STACK  
 4647 02640 IFN LENGTH,<  
 4648 02660 LHLD TEMP3>  
 4649 02680 IFE LENGTH,<  
 4650 02700 LHLD TEMP2> JIF WE DON'T HAVE "LENGTH"  
 4651 JIN OPERATORS CAN ONLY  
 4652 02740 JBE ONE CHARACTER SO TO "REREAD"  
 4653 02760 JAN OPERATOR THAT WE LOOKED  
 4654 02780 JAT BEFORE AND DECIDED NOT TO  
 4655 02800 JAPPLY WE JUST "DCK H"  
 4656 02820 JIF LENGTH IS ON WE HAVE TO  
 4657 JREAD THE OPERATOR AND THE LENGTH BEFORE  
 4658 02840 JTHE OPERATOR AND AFTER SO WE CAN  
 4659 02860 JEITHER RESCAN THE OPERATOR  
 4660 02880 JLATER IF IT DOESN'T GET APPLIED  
 4661 02900 JFOR GO BEYOND IT WHEN IT DOES  
 4662 02920 JMP LPOPER> JPUT ON PRECEDENCE AND LOOK AT A  
 4663 NEW OPERATOR  
 4664  
 4665 03000 IFE LENGTH=2,<  
 4666 03020 PUSH B JSAVE THE OLD PRECEDENCE  
 4667 03040 LXI B,RETADP JPUT ON THE ADDRESS OF THE  
 4668 03060  
 4669 03080 MOV A,0 JSEE IF THE OPERATOR IS EXPONENTIATION  
 4670 03100 CPI 127 JWHICH HAS PRECEDENCE 127  
 4671 03120 JZ EXPSTK JIF SO, "FRCNSG" AND MAKE A SPECIAL STACK ENTRY  
 4672 03140 CPI 81 JSEE IF THE OPERATOR IS "AND" OR "OR"  
 4673 03160 JC ANDORD JAND IF SO "FRCINT" AND  
 4674 03180  
 4675 03200 ; JMAKE A SPECIAL STACK ENTRY  
 4676 03220 ; THIS CODE PUSHES THE CURRENT VALUE IN THE FAC  
 4677 03240 ; INTO THE STACK, EXCEPT IN THE CASE OF STRINGS IN WHICH IT CALLS  
 4678 03260 ; TYPE MISMATCH ERROR, [D] AND [E] ARE PRESERVED.  
 4679 03280 ;  
 4680 03300 NUMREL: LUA VALTYP JGET THE VALUE TYPE  
 4681 03320