

BASIC MCS 0000 GATES/ALLEN/DAVIDOFF MACRO 47(113) 03112 10-SEP-75 PAGE 12-1
F3 MAC 6-SEP-64 03111 RESTORE,STOP,END,LINGET,CHRCN

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3035 003520 000000 003514
3036 003521 001000 000042      44160      SHLD      OLDTXT      ;SAVE IT
3037 003522 000000 001613
3038 003523 000000 003517
3039 003524
3040
3041 003524 001000 000257      44180      DIRIS:
3042 003525 001000 000062      44200      IFN      CONTRM,<
3043 003526 000000 001341      44220      XRA      A
3044 003527 000000 003522      44240      STA      CNTWFL>      ;FORCE OUTPUT
3045 003530 001000 000361      44280      PUP      PSW
3046 003531 001000 000041      44300      LXI      H,BKRTXT      ;GET BACK "C FLAG
3047 003532 000000 001734      ;"BREAK"
3048 003533 000000 003526
3049 003534 001000 000302      44320      JNZ      ERRFIN      ;CALL STROUT AND FALL INTO READY
3050 003535 000000 002127
3051 003536 000000 003532
3052 003537 001000 000503      44340      JMP      READY>      ;TYPE "READY"
3053 003540 000000 002145
3054 003541 000000 003535
3055
3056
3057
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3059
3060
3061 003542 001000 000300      44360      IFE      REALIO,<
3062 003543 001000 000036      44380      OUT:      PUP      B
3063 003544 000000 000021      44400      MRRZ     14,JOB00T##
3064 003545 001000 000052      44420      JRST     R(14)>
3065 003546 000000 001613
3066 003547 000000 003540      44440      IFN      LENGTH,<
3067
3068
3069
3070 003550 001000 000174      44480      CONT:   RNZ
3071 003551 001000 000265      44500      MVI      E,ERRCN
3072 003552 001000 000312
3073 003553 000000 002102
3074 003554 000000 003546      44520      LHLD     OLDTXT      ;A STORED TEXT POINTER OF
3075 003555 001000 000353
3076 003556 001000 000052      44540      XCHG
3077 003557 000000 001611      44560      LHLD     OLDLIN
3078 003560 000000 003553
3079 003561 001000 000042      44600      MOV      A,M
3080 003562 000000 001607      44620      ORA      L
3081 003563 000000 003557      44640      JZ        ERROR
3082 003564 001000 000353
3083 003565 001000 000311      44660      XCHG
3084
3085 003566 001000 000315      44680      LHLD     OLDTXT      ;SAVE [M,L]
3086 003567 000000 011020      44690      MOV      A,M
3087 003570 000000 003562      44700      JZ        ERROR
3088
3089
3090
3091
3092
3093
3094 003575 001000 000322      44720      XCHG
3095 003576 000000 010776      44740      RET>
3096 003577 000000 003567      44760      IFN      LENGTH,<
3097 003600 001000 000062      44780      NULL:   CALL     GETBYT
3098 003601 000000 000046
3099 003602 000000 003576
3100 003603 001000 000311
3101
3102 003604 001000 000076      44800      RET>
3103 003605 001000 000257      44900      IFE      LENGTH=2,<
3104 003606 001000 000062      44920      TON:      XWD      "01000,"076
3105 003607 000000 001631      45000      TOFF:     XRA      A
3106 003610 000000 003601      45020      STA      THCFLG      ;"MVI A," NON-ZERO QUANTITY
3107 003611 001000 000311      45040      RET>
3108
3109
3110
3111
3112 003612 001000 000176      45060      ;
3113 003613 001000 000376      45080      ;TEST FOR A LETTER / CARRY ON=NOT A LETTER
3114 003614 000000 000101      45100      ;
3115 003615 001000 000330      45120      ;
3116 003616 001000 000376      45140      ISLET:   MOV      A,M
3117 003617 000000 000133      45160      CPI      "A"
3118 003620 001000 000077      45180      RC
3119 003621 001000 000311      45200      CPI      91
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BASIC MCS 0000 GATES/ALLEN/DAVIDOFF MACRO 47(113) 03112 10-SEP-75 PAGE 12-2
F3 MAC 6-SEP-64 03111 RESTORE,STOP,END,LINGET,CHRCN

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3088 003571 001000 000300      44800      RNZ
3089 003572 001000 000074      44820      INR      A
3090 003573 001000 000376      44840      CPI      LINLEN      ;MAKE SURE THE NUMBER IS REASONABLE
3091 003574 000000 000110
3092
3093
3094 003575 001000 000322      44860      LINPT2=1,1
3095 003576 000000 010776      44900      JNC      FCERR
3096 003577 000000 003567
3097 003600 001000 000062      44920      STA      NULCNT      ;CHARGE NUMBER OF NULLS
3098 003601 000000 000046
3099 003602 000000 003576
3100 003603 001000 000311
3101
3102 003604 001000 000076      44940      RET>
3103 003605 001000 000257      44960      IFE      LENGTH=2,<
3104 003606 001000 000062      44980      TON:      XWD      "01000,"076
3105 003607 000000 001631      45000      TOFF:     XRA      A
3106 003610 000000 003601      45020      STA      THCFLG      ;"MVI A," NON-ZERO QUANTITY
3107 003611 001000 000311      45040      RET>
3108
3109
3110
3111
3112 003612 001000 000176      45060      ;
3113 003613 001000 000376      45080      ;TEST FOR A LETTER / CARRY ON=NOT A LETTER
3114 003614 000000 000101      45100      ;
3115 003615 001000 000330      45120      ;
3116 003616 001000 000376      45140      ISLET:   MOV      A,M
3117 003617 000000 000133      45160      CPI      "A"
3118 003620 001000 000077      45180      RC
3119 003621 001000 000311      45200      CPI      91
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BASIC	MCS	0000	GATES/ALLEN/DAVIDOFF	MACRO 47(113)	03:12	10-SEP-75	PAGE 12=3
F3	MAC	6-SEP=04	03:11	RESTORE,STOP,END,LINGET,CHRCN			
3141	003622	001000	000327	45680	FCERR:	MVI	E,ERRFC
3142				45700		JMP	ERROR>
3143				45720	IFE	LENGTH=2,<	
3144	003622	001000	000345	45740	INTIOX:	CHRG	
3145	003623	001000	000315	45760	INTIOZ:	CALL	FRMEVL
3146	003624	000000	000530				FEVALUATE A FORMULA
3147	003625	000000	000607				
3148	003626	001000	000345	45780	PUSH	H	SAVE THE TEXT POINTER
3149	003627	001000	000315	45800	CALL	PKCINT	CONVERT THE FAC TO AN INTEGER
3150	003630	000000	000606				
3151	003631	000000	000624				
3152	003632	001000	000174	45820	MVA	A,H	SEE IF THE RESULT IS NEGATIVE
3153	003633	001000	000267	45840	ORU	A	BY LOOKING AT (H)'S MSB
3154	003634	001000	000372	45860	JM	FCERR	DON'T ALLOW NEGATIVE NUMBERS
3155	003635	000000	010776				
3156	003636	000000	000630				
3157	003637	001000	000353	45880	XCHG		RETURN THE INTEGER IN (D,E)
3158	003640	001000	000341	45900	POP	H	RESTORE THE TEXT POINTER
3159	003641	001000	000311	45920	RET>		
3160							
3161				45960			
3162				45980			LINGET READS A LINE # FROM THE CURRENT TEXT POSITION
3163				46000			
3164				46020			LINE NUMBERS RANGE FROM 0 TO 65529
3165				46040			
3166				46060			(D,E) IS SMASHED.
3167				46080			
3168				46100			ANSWER RETURNED IN (D,E).
3169				46120			(H,L) IS UPDATED TO POINT TO THE TERMINATING CHARACTER
3170				46140			AND (A) CONTAINS THE TERMINATING CHARACTER WITH CONDITION
3171				46160			CODES SET UP TO REFLECT ITS VALUE.
3172				46180			
3173	003642	001000	000053	46200	LINGET:	DCX	H
3174	003643	001000	000021	46220	LINGET:	LXI	D,SCODE
3175	003644	000000	000000				ZERO ACCUMULATED LINE #
3176	003645	000000	000353				
3177	003646	001000	000327	46240	MORLIN:	CHRG	
3178	003647	001000	000320	46260		RNC	WAS IT A DIGIT
3179	003650	001000	000345	46280		PUSH	H
3180	003651	001000	000308	46300		PUSH	PSH
3181	003652	001000	000041	46320		LXI	H,SCODE+6552
3182	003653	000000	014630				SEE IF THE LINE # IS TOO BIG
3183	003654	000000	000644				
3184	003655	001000	000347	46340		COMPAR	
3185	003656	001000	000370	46360		JC	SNERR
3186	003657	000000	000722				YES, SYNTAX ERROR
3187	003660	000000	000653				
3188	003661	001000	000142	46380		MOV	H,D
3189	003662	001000	000153	46400		MOV	L,E
3190	003663	001000	000031	46420		DAD	D
3191	003664	001000	000051	46440		DAD	H
3192	003665	001000	000031	46460		DAD	D
3193	003666	001000	000051	46480		DAD	H
							PUTTING (D,E)+10 INTO (H,L)

BASIC	MCS	0000	GATES/ALLEN/DAVIDOFF	MACRO 47(113)	03:12	10-SEP-75	PAGE 12=4
F3	MAC	6-SEP=04	03:11	RESTORE,STOP,END,LINGET,CHRCN			
3194	003667	001000	000361	46500		POP	PSW
3195	003670	001000	000326	46520		SUI	"0"
3196	003671	000000	000606				
3197	003672	001000	000137	46540		MOV	E,A
3198	003675	001000	000026	46560		MVI	D,0
3199	003674	000000	000000				
3200	003675	001000	000031	46580		DAD	D
3201	003676	001000	000353	46600		XCHG	
3202	003677	001000	000341	46620		POP	H
3203	003700	001000	000303	46640		JMP	MORLIN
3204	003701	000000	000646				
3205	003702	000000	000657				
3206							
3207	003703	001000	000312	46660	IFN	LENGTH,<	
3208	003704	000000	000443	46680	CLEAR:	JZ	CLEARC
3209	003705	000000	000301				IF NO FORMULA JUST CLEAR
3210	003706	001000	000315	46700		CALL	INTIOZ
3211	003707	000000	000623				GET AN INTEGER INTO (D,E)
3212	003710	000000	000704				
3213	003711	001000	000053	46720		DCX	H
3214	003712	001000	000327	46740		CHRG	
3215	003713	001000	000300	46760		RNZ	SHOULD FINISH THERE
3216	003714	001000	000343	46780		PUSH	H
3217	003715	001000	000052	46800		LHLD	MEMSIZ
3218	003716	000000	000545				GET HIGHEST ADDRESS
3219	003717	000000	000307				
3220	003720	001000	000175	46820		MOV	A,L
3221	003721	001000	000223	46840		SUB	E
3222	003722	001000	000137	46860		MOV	E,A
3223	003723	001000	000174	46880		MOV	A,H
3224	003724	001000	000032	46900		SBB	D
3225	003725	001000	000027	46920		MOV	D,A
3226	003726	001000	000332	46940		JC	SNERR
3227	003727	000000	000722				WANTED MORE THAN TOTAL
3228	003730	000000	000316				
3229	003731	001000	000052	46960		LHLD	VARTAB
3230	003732	000000	000621				STOP LOCATION IN USE
3231	003733	000000	000727				
3232	003734	001000	000001	46980		LXI	B,SCODE+40
3233	003735	000000	000050				LEAVE BREATHING ROOM
3234	003736	000000	000332				
3235	003737	001000	000011	47000		DAD	B
3236	003740	001000	000347	47020		COMPAR	
3237	003741	001000	000326	47040		JNC	OMERR
3238	003742	000000	000627				NO, DON'T EVEN CLEAR
3239	003743	000000	000335				
3240	003744	001000	000353	47060		XCHG	
3241	003745	001000	000042	47080		SHLD	STKTOP
3242	003746	000000	000615				NEW STACK LOCATION (H,L)
3243	003747	000000	000342				SET UP NEW STACK LOCATION
3244	003750	001000	000341	47100		POP	H
3245	003751	001000	000303	47120		JMP	CLEARC
3246	003752	000000	000443				GO CLEAR

3247 003753* 000000 003746*
3248

47140 PAGE

3249
3250
3251 003754* 001000 000312
3252 003755* 000000 002437*
3253 003756* 000000 00375e*
3254
3255
3256 003757* 001000 000315
3257 003760* 000000 002443*
3258 003761* 000000 003755*
3259
3260
3261 003762* 001000 000001
3262 003763* 000000 003302*
3263 003764* 000000 003760*
3264 003765* 001000 000303
3265 003766* 000000 004007*
3266 003767* 000000 003763*
3267
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3275
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3278
3279
3280 003770* 001000 000315
3281 003771* 000000 002024*
3282 003772* 000000 003766*
3283 003773* 000000 000003
3284 003774* 001000 000301
3285 003775* 001000 000345
3286 003776* 001000 000345
3287 003777* 001000 000052
3288 004000* 000000 001607*
3289 004001* 000000 003777*
3290 004002* 001000 000343
3291 004003* 001000 000026
3292 004004* 000000 000014
3293
3294 004005* 001000 000325
3295 004006* 001000 000063
3296 004007* 001000 000305
3297
3298
3299
3300
3301

47160 SUBTTL RUN,GOTO,GOSUB,RETURN
47180 IFN LENGTH,<
47200 RUN: JZ RUNC AND LINE # ARGUMENT

47220
47240
47260 CALL CLEARC
;CLEAN UP,SET [H,L]=[TXTTR]=1 AND
;RETURN TO NEWSTT
;CLEAN UP -- RESET THE STACK

47280
47300
47320
;DATPTR,VARIABLES ...
;[H,L] IS THE ONLY THING PRESERVED
LXI B,NEWSTT

47340 JMP RUNC2>
;PUT "NEWSTT" ON AND FALL INTO "GOTO"

47360 ;
47380 ; A GOSUB ENTRY ON THE STACK HAS THE FOLLOWING FORMAT
47400 ;
47420 ; LOW ADDRESS
47440 ;
47460 ; A TOKEN EQUAL TO GOSUTK 1 BYTE
47480 ; THE LINE # OF THE THE GOSUB STATEMENT 2 BYTES
47500 ; A POINTER INTO THE TEXT OF THE GOSUB 2 BYTES
47520 ;
47540 ; HIGH ADDRESS
47560 ;
47580 ; TOTAL 5 BYTES
47600 ;
47620 GOSUB: CALL GETSTK ;MAKE SURE THERE IS ROOM

47640 3
47660 POP B ;POD OFF RETURN ADDRESS OF "NEWSTT"
47680 PUSH H ;REALLY PUSH THE TEXT POINTER
47700 PUSH H ;SAVE TEXT POINTER
47720 LHLD CURLIN ;GET THE CURRENT LINE #

47740 XTHL ;PUT CURLIN ON THE STACK AND [H,L]=TEXT PTR
47760 MVI D,GOSUTK ;LEAVE A GOSUB TOKEN

47780
47800
47820
47840 RUNC2: PUSH D ;ON THE STACK
47860 INX SP ;THE GOSUB TOKEN TAKES ONLY ONE BYTE
47880 PUSH B ;RESTORE RETURN ADDRESS
47900 ; OF "NEWSTT"
47920 ;
47940 ; IN THE 4K VERSION WE START AT THE BEGINNING
; AND SEARCH, IN THE 8K WE START WHERE WE
; ARE IF WE ARE GOING TO A FORWARD LOCATION,

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3302      47960  ;
3303 004010* 001000 000315 47980 GOTO: CALL LINGET ;PICK UP THE LINE #
3304 004011* 000000 005042*
3305 004012* 000000 004000*
3306
3307      48000
3308      48020 IFE LENGTH,<RNZ ;AND PUT IT IN [D,E]
3309      48040 ;SMDULD END WITH A LINE
3310      48060 ;TERMINATOR == BLOW HIM UP
3311      48080 ;IF IT DOESN'T
3312      48100 ;ON GOTO MAKES THIS WRONG
3313      48120 ;IN OTHER VERSIONS)
3314      48140
3315      48160 IFN CALL FNDLIN*
3316      004013* 001000 000315 CALL LENGTH,<
3317      004014* 000000 004074* CALL REM ;SKIP TO THE END OF THIS LINE
3318      004015* 000000 004011*
3319      004016* 001000 000345 48180 PUSH H ;SAVE THE POINTER
3320      004017* 001000 000052 48200 LHL D,CURLIN ;GET THE CURRENT LINE #
3321      004021* 000000 004014*
3322      004022* 001000 000347 48220 COMPARE ;[D,E] CONTAINS WHERE WE ARE GOING
3323      48240 ;[H,L] CONTAINS THE CURRENT LINE#
3324      48260 ;SO COMPARE THEM TELL US WHETHER TO
3325      48300 ;START SEARCHING FROM WHERE WE ARE OR
3326      48320 ;TO START SEARCHING FROM THE BEGINNING
3327 004023* 001000 000341 48340 POP H ;OF TITAB
3328 004024* 001000 000043 48360 INX H ;[H,L] CURRENT POINTER
3329 004025* 001000 000334 48380 CC H ;POINT AT THE LINK BEYOND IT
3330 004026* 000000 002374* ;SEARCH FROM THIS POINT
3331 004027* 000000 004020*
3332 004030* 001000 000324 48400 CNC FNDLIN* ;SEARCH FROM THE BEGINNING -- ACTUALLY
3333 004031* 000000 002371*
3334 004032* 000000 004026* 48420 ;SEARCH AGAIN IF ABOVE SEARCH FAILED
3335
3336      48440
3337      48460 MOV M,B
3338      48480 MOV M,L,C
3339      48500 DCX M
3340      48520 USERR: NWI E,ERRUS ;IF A MATCH WE ARE DONE
3341      004040* 000000 000010 48540 JNP ERROR ;C=MATCH,SO IF NO MATCH WE
3342      004041* 001000 000303
3343      004042* 000000 002102*
3344      004043* 000000 004031*
3345      48560 ;GIVE A "US" ERROR
3346      48580 ;
3347      48600 ; SEE "GOSUB" FOR THE FORMAT OF THE STACK ENTRY
3348      48620 ; "RETURN" RESTORES THE LINE NUMBER AND TEXT POINTER ON THE STACK
3349      48640 ; AFTER ELIMINATING ALL THE "FOR" ENTRIES IN FRONT OF THE "GOSUB"
3350      48660 ; ENTRY
3351      48680 ;
3352      48700 RETURN: RNZ ;BLOW HIM UP IF THERE ISN'T A TERMINATOR
3353      48720 NWI D,255 ;MAKE SURE THIS VARIABLE POINTER
3354      004060* 000000 000377

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3355      48740 ;IN [D,E] NEVER GETS MATCHED
3356 004047* 001000 000315 48760 CALL FNDFOR ;GO PAST ALL THE "FOR" ENTRIES
3357      004050* 000000 001744*
3358      004051* 000000 004042*
3359      004052* 001000 000371 48780 SPHL ;UPDATE THE STACK
3360      004053* 001000 000376 48800 CPI GOSUBK
3361      004054* 000000 000214 48820 MVI E,ERRRG ;ERROR ERRRG IS "RETURN WITHOUT GOSUB"
3362      004055* 001000 000036 48840 JNZ ERROR
3363      004056* 000000 000003
3364      004057* 001000 000302
3365      004060* 000000 002102*
3366      004061* 000000 004050*
3367      004062* 001000 000341 48860 POP H ;GET LINE # "GOSUB" WAS FROM
3368      004063* 001000 000042 48880 SHL D,CURLIN ;PUT IT INTO CURLIN
3369      004064* 000000 001007*
3370      004065* 000000 004060*
3371      004066* 001000 000041 48900 LXI H,NEWSTT
3372      004067* 000000 003302*
3373      004070* 000000 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 ;ONTO THE STACK THE LINE # ARGUMENT HADN'T
3380      49040 ;BEEN READ IN YET,
3381
3382
3383
3384      49100 IFN STRING,<
3385      004072* 001000 000001 49120 DATA: XWD "01000,"01
3386      004073* 000000 000072 49140 ;" ;
3387      49160 ;
3388      49180 ;AND 0, "1" ONLY APPLIES IF
3389      49200 IFE LENGTH=2,<ELSE1> ;QUOTES HAVE MATCHED UP
3390      49220 ; ;EXECUTED "ELSE" ARE SKIPPED
3391      49240 ; ;
3392      49260 ; ;NOTE: REM MUST PRESERVE [D,E] BECAUSE OF "GO TO" AND ERROR
3393      49280 REM: XWD "01000,"016
3394      49300 XWD "01000,0
3395      49340 NWI B,0 ;[H,L] C, THE ONLY TERMINATOR IS 0
3396      49360 EXCHGT: MOV A,C ;[DATA] ACTUALLY EXECUTES THIS 0
3397      49380 MOV C,B ;INSIDE QUOTES THE ONLY TERMINATOR IS ZERO
3398      49400 MOV B,A
3399      49420 REMER: MOV A,M
3400      49440 ORA A ;WHEN A QUOTE IS SEEN THE SECOND
3401      49460 RZ ;TERMINATOR IS TRADED, SO IN "DATA"
3402      49480 ;COLONS INSIDE QUOTATIONS WILL HAVE NO EFFECT
3403      49500 RZ B ;GET THE CHARACTER
3404      49520 INX H ;ZERO IS ALWAYS A TERMINATOR
3405      49540 CPI 34 ;TEST FOR THE OTHER TERMINATOR
3406      004110* 001000 000043
3407      004111* 001000 000376
3408      004112* 000000 000042

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