

HASIC MCS 0000 F3	GATES/ALLEN/DAVIDOFF MAC 6-SEP-64 03:11	MACRO 47(113) 03:12 10-SEP-75 PAGE 17 PRINT CODE
3740		54400 SUBTTL PRINT CODE
3741		
3742		54440 IFN LPTSH,<
3743		54460 LPRINT: MVI A,1
3744		54480 STA PRTFLG>
3745 004407* 001000 000053		54500 NEWCHR: DCX H
3746 004410* 001000 000327		54520 MURPR: CHRGET
3747 004411* 001000 000312		54540 PRINT: JZ CRD0
3748 004412* 000000 004525*		
3749 004413* 000000 004405*		
3750		54560
3751 004414* 001000 000310		54580 PRINTC: RZ
3752		54600
3753		54620
3754		54640
3755		54660 IFE STRING,<
3756		54680 CPI 34
3757		54700 CZ STRDUI
3758		54720 JZ NEWCHR>
3759 004415* 001000 000376		54740 CPI TABTK
3760 004416* 000000 000240		
3761 004417* 001000 000312		54760 JZ TABER
3762 004420* 000000 004577*		
3763 004421* 000000 004412*		
3764		54780 IFN LENGTH,<
3765 004422* 001000 000376		54800 CPI SPCTK
3766 004423* 000000 000242		
3767 004424* 001000 000312		54820 JZ TABER>
3768 004425* 000000 004577*		
3769 004426* 000000 004420*		
3770 004427* 001000 000345		54840 PUSH H
3771 004430* 001000 000376		54860 CPI 44
3772 004431* 000000 000054		
3773 004432* 001000 000312		54880 JZ COMPR1
3774 004433* 000000 004535*		
3775 004434* 000000 004425*		
3776 004435* 001000 000376		54900 CPI 59
3777 004436* 000000 000073		
3778 004437* 001000 000312		54920 JZ NOTABR
3779 004440* 000000 004537*		
3780 004441* 000000 004433*		
3781 004442* 001000 000301		54940 PUP B
3782 004443* 001000 000315		54960 CALL FRMEVL
3783 004444* 000000 004536*		
3784 004445* 000000 004440*		
3785		54980
3786		55000
3787 004446* 001000 000053		55020 DCX H
3788 004447* 001000 000345		55040 PUSH H
3789		55060 IFN STRING,<
3790		55080 IFE LENGTH=2,<
3791 004450* 001000 000315		55064 CALL GETYPE
3792 004451* 000000 006507*		

HASIC MCS 0000 F3	GATES/ALLEN/DAVIDOFF MAC 6-SEP-64 03:11	MACRO 47(113) 03:12 10-SEP-75 PAGE 17-1 PRINT CODE
3793 004452* 000000 004444*		55066 JZ STRDUI>
3794 004453* 001000 000312		
3795 004454* 000000 004507*		
3796 004455* 000000 004451*		
3797		55068 IFN LENGTH=2,<
3798		55080 LDA VALTYP
3799		55100 ORA A
3800		55120 JNZ STRDUI>>
3801 004456* 001000 000315		55140 CALL FOUT
3802 004457* 000000 000000*		
3803 004460* 000000 004454*		
3804		55160 IFE STRING,<CALL STRDUI>
3805		55180 IFN STRING,<
3806		55200 CALL STRLIT
3807 004461* 001000 000315		
3808 004462* 000000 007637*		
3809 004463* 000000 004457*		
3810 004464* 001000 000052		55220 LHL0 FACLO
3811 004465* 000000 001637*		
3812 004466* 000000 004462*		
3813		55240 IFN LPTSH,<
3814		55260 LDA PRTFLG
3815		55280 ORA A
3816		55300 JZ ISTDY
3817		55320 LDA LPTPOS
3818		55340 ADD M
3819		55360 CPI LPTLEN
3820		55380 JMP LINCXK
3821 004467* 001000 000072		55400 ISTDY>
3822 004470* 000000 000047*		55420 LDA TTYPOS
3823 004471* 000000 004465*		
3824 004472* 001000 000000		
3825 004473* 001000 000376		55440 ADD M
3826 004474* 000000 000110		55460 CPI LINLEN
3827		55480 LINPT3=1,=1
3828 004475* 001000 000324		55500 LINCXK: CNZ CRD0
3829 004476* 000000 004523*		
3830 004477* 000000 004470*		
3831 004500* 001000 000315		55520 CALL STRPRT>
3832 004501* 000000 007746*		
3833 004502* 000000 004476*		
3834 004503* 001000 000076		55540 MVI A," "
3835 004504* 000000 000040		
3836 004505* 001000 000337		55560 OUTCHR
3837		55580 IFN STRING,<
3838		55590 IFE LENGTH=2,<
3839 004506* 001000 000267		55595 ORA A
3840 004507* 001000 000314		55597 STRDUI: CZ STRPRT>
3841 004510* 000000 007746*		
3842 004511* 000000 004501*		
3843		55598 IFN LENGTH=2,<
3844		55599 XRA A
3845		55600 STRDUI: CNZ STRPRT>>

BASIC	MAC	GATES/ALLEN/DAVIDOFF	MACRO	47(113)	03:12	10-SEP-75	PAGE	17-2
F3	MAC	6-SEP-64 03:11	PRINT	CODE				
3646	004512	001000 000341	55620	POP	H			
3647	004513	001000 000303	55640	JMP	MURPR			PRINT SOME MORE
3648	004514	000000 004410						
3649	004515	000000 004510						
3650	004516	001000 000666	55660	FININL	MVI	M,0		PUT A ZERO AT THE END OF BUF
3651	004517	000000 000000						
3652	004520	001000 000641	55680	LXI	H,BUFMIN			SETUP POINTER
3653	004521	001000 001430						
3654	004522	000000 004514						
3655			55700	CRDUI	IFN	LPTSW,<		
3656			55720	LDA	PRTFLG			
3657			55740	ORA	A			
3658			55760	JNZ	PRINTW			
3659	004523	001000 000076	55780	MVI	A,13			
3660	004524	000000 000015						
3661	004525	001000 000662	55800	STA	TIYPOS			MAKE TIYPOS LESS THAN LINE LENGTH
3662	004526	000000 000047						
3663	004527	000000 004521						
3664			55820					SO CRDUI DOESN'T GET CALLED AGAIN
3665	004530	001000 000337	55840	OUTCHR				
3666	004531	001000 000076	55860	MVI	A,10			
3667	004532	000000 000012						
3668	004533	001000 000337	55880	OUTCHR				
3669	004534	001000 000072	55900	CRFIN:	LDA	NULCNT		GET NUMBER OF NULLS
3670	004535	000000 000040						
3671	004536	000000 004526						
3672	004537	001000 000075	55920	PRTNUL	DCR	A		
3673	004540	001000 000662	55940	STA	TIYPOS			EVENTUALLY SETUP TIYPOS=0
3674	004541	000000 000047						
3675	004542	000000 004535						
3676	004543	001000 000310	55960	RZ				
3677			55980					
3678			56000					
3679	004544	001000 000365	56020	PUSH	PSW			
3680	004545	001000 000257	56040	ORA	A			
3681	004546	001000 000337	56060	OUTCHR				
3682	004547	001000 000361	56080	POP	PSW			
3683	004550	001000 000303	56100	JMP	PRTNUL			
3684	004551	000000 004537						
3685	004552	000000 004541						
3686			56120	IFE	STRING,<			
3687			56140	STROUT:	INX	H		
3688			56160	STROUT:	MOV	A,H		
3689			56180	ORA	A			
3690			56200	RZ				CHECK FOR END OF LINE
3691			56220	INX	H			LET IT END THAT WAY
3692			56240	CPI	34			
3693			56260	RZ				TERMINATING QUOTE?
3694			56280	OUTCHR				DO IF SO
3695			56300	CPI	CR			PRINT THE CHARACTER IN (A)
3696			56320	CZ	CRDUI			IF IT'S A CARRIAGE RETURN
3697			56340	JMP	STROUT			TYPE LINE-FEED AND SET (TIYPOS)=0
3698								PRINT MORE CHARACTERS

BASIC	MAC	GATES/ALLEN/DAVIDOFF	MACRO	47(113)	03:12	10-SEP-75	PAGE	17-3
F3	MAC	6-SEP-64 03:11	PRINT	CODE				
3699			56360	COMPT:	IFN	LPTSW,<		
3700			56400	LDA	PRTFLG			
3701			56420	ORA	A			OUTPUT TO THE LINE PRINTER?
3702			56440	JZ	ISCTTY			NONZERO MEANS YES
3703			56460	LDA	LPTPOS			NO, DO TELETYPE COMMA
3704			56480	NLPPPOS=	CLMID			GET LINE PRINTER POSITION
3705			56500					POSITION BEYOND WHICH THERE ARE
3706			56520	CPI	NLPPPOS			NO MORE COMMA FIELDS, SO
3707			56540	JMP	CHKCOM			COMMA JUST DOES A "CRDUI"
3708			56560	ISCTTY>				USE TELETYPE CHECK
3709	004553	001000 000072	56580	LDA	TIYPOS			GET TELETYPE POSITION
3710	004554	000000 000047						
3711	004555	000000 004551						
3712			56600	NUTPOS=	CLMID			POSITION BEYOND WHICH THERE ARE
3713			56620					NO MORE COMMA FIELDS
3714	004556	001000 000376	56640	CPI	NUTPOS			SO ALL COMMA DUES IS A "CRDUI"
3715	004557	000000 000070						
3716			56660	LINPT=	1			FIKED UP BY "TERMINAL WIDTH" QUESTION
3717	004560	001000 000324	56680	CHKCOM:	CNC	CRDUI		TYPE CRUF
3718	004561	000000 004523						
3719	004562	000000 004554						
3720	004563	001000 000322	56700	JNC	NOTABR			AND QUIT IF BEYOND THE LAST COMMA FIELD
3721	004564	000000 004571						
3722	004565	000000 004561						
3723	004566	001000 000320	56720	MORCOM:	SUI	CLMID		GET (A) MODULUS CLMID
3724	004567	000000 000016						
3725	004570	001000 000322	56740	JNC	MORCOM			
3726	004571	000000 004566						
3727	004572	000000 004564						
3728	004573	001000 000057	56760	CMA				WE WANT TO FILL
3729			56780					THE PRINT POSITION OUT
3730			56800					TO AN EVEN CLMID, SO
3731			56820					WE PRINT CLMID-(A) MOD CLMID SPACES
3732	004574	001000 000303	56840	JMP	ASPA2			GO PRINT (A)+1 SPACES
3733	004575	000000 004626						
3734	004576	000000 004571						
3735								
3736	004577		56860	TABER:				
3737	004577	001000 000365	56900	IFN	LENGTH,<	PSW		REMEMBER IF (A)=SPCTK OR TABTK
3738			56920	IFE	LENGTH,<			
3739			56940	CALL	INTIUX			INTEGERIZE A FORMULA INTO (D,E)
3740			56960	IFN	LENGTH,<			
3741	004600	001000 000315	56980	CALL	GTBYTC			GET VALUE INTO (E)
3742	004601	000000 011017						
3743	004602	000000 004575						
3744	004603	001000 000317	57000	SYNCHR	"J"			
3745	004604	000000 000051						
3746	004605	001000 000053	57020	DCX	H			
3747			57040	IFN	LENGTH,<			
3748	004606	001000 000361	57060	POP	PSW			GET BACK SPCTK OR TABTK
3749	004607	001000 000376	57080	CPI	SPCTK			HAS IT SPCTK?
3750	004610	000000 000242						
3751	004611	001000 000345	57100	PUSH	H			SAVE THE TEXT POINTER

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3952          57120  IFN  LENGTH,<
3953 004612' 001000 000173 57140  MOV  A,E
3954 004613' 001000 000312 57160  JZ   ASPAC>  IFOR "SPC" PUT THE FORMULA
3955 004614' 000000 004621'  IVALUE IN [A]
3956 004615' 000000 004601'
3957          57180  IFN  LPTSM,<
3958          57200  LDA  PRTFLG  ILINE PRINTER OR TTY?
3959          57220  ORA  A        INON=ZERO MEANS LPT
3960          57240  JZ   TTYIST
3961          57260  LDA  LPTPOS  IGET LINE PRINTER POSITION
3962          57280  JMP  DUSIZT>
3963          57300  TTYIST: LDA  TTYPOS  IGET TELETYPE PRINT POSITION
3964 004617' 001000 000047'
3965 004620' 000000 004614'
3966 004621' 001000 000057
3967 004622' 001000 000003 57320  DUSIZT: CMA
3968 004623' 001000 000322 57340  AUD  E        IPRINT [E]=[A] SPACES
3969 004624' 000000 004517' 57360  JNC  E        IF NEGATIVE, DON'T PRINT ANY
3970 004625' 000000 004617'
3971          57380
3972          57400  ASPA2: INR  A        ISPACES
3973 004627' 001000 000107 57420  ASPAC: MOV  B,A
3974 004630' 001000 000076 57440  MVI  A," "  I[B]=NUMBER OF SPACES TO PRINT
3975 004631' 000000 000040  I[A]=SPACE
3976 004632' 001000 000537 57460  REPDUT: OUTCHR
3977 004633' 001000 000005 57480  OR   B
3978 004634' 001000 000502 57500  JNZ  REPDUT  IPRINT [A]
3979 004635' 000000 004632'  IDECREMENT THE COUNT
3980 004636' 000000 004624'
3981 004637' 001000 000341 57520  NOTABR: POP  H        IPIK UP TEXT POINTER
3982 004640' 001000 000327 57540  CMRGT CRRGET  IAND THE NEXT CHARACTER
3983 004641' 001000 000303 57560  JMP  PRINTC  IAND SINCE WE JUST PRINTED
3984 004642' 000000 004614'
3985 004643' 000000 004635'
3986          57580
3987          57600
3988          57620  PAGE  ISPACES, DON'T CALL CRDO
3989          IIF IT'S THE END OF THE LINE

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3989          57640  SUBTIL INPUT AND READ CODE
3990          57660  IFN  LENGTH,<
3991 004644' 000000 000077 57680  TRYAGN: DC"2REDO FROM START"
3992 004645' 000000 000122
3993 004646' 000000 000103
3994 004647' 000000 000104
3995 004650' 000000 000117
3996 004651' 000000 000040
3997 004652' 000000 000106
3998 004653' 000000 000122
3999 004654' 000000 000117
4000 004655' 000000 000115
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 004663' 000000 000324
4008 004664' 000000 000015 57700  ACRLF
4009 004665' 000000 000012 57720  0
4010 004666' 000000 000000 57740  I
4011          57760  I HERE WHEN THE DATA THAT WAS TYPED IN OR IN "DATA" STATEMENTS
4012          57780  I IS IMPROPERLY FORMATTED, FOR "INPUT" WE START AGAIN,
4013          57800  I FOR "DATA" WE GIVE A SYNTAX ERROR AT THE DATA LINE
4014          57820  I
4015          57840  TRMNOK: LDA  FLGINP  I[WAS IT READ OR INPUT?
4016 004667' 001000 000072
4017 004670' 000000 001602'
4018 004671' 000000 004644'
4019 004672' 001000 000027 57860  ORA  A        I2REDO=INPUT
4020 004675' 001000 000302 57880  JNZ  DATSNE  I[GIVE ERROR AT DATA LINE
4021 004674' 000000 002664'
4022 004673' 000000 004670'
4023          57900  POP  B        IGET R10 OF THE POINTER INTO THE VARIABLE LIST
4024 004676' 001000 000301
4025 004677' 001000 000041 57920  LXI  H,TRYAGN
4026 004700' 000000 004644'
4027 004701' 000000 004674'
4028 004702' 001000 000315 57940  CALL  STROUT  IPRINT "2REDO FROM START"
4029 004705' 000000 007743'
4030 004704' 000000 004700'
4031 004705' 001000 000052 57960  LHLU  TEMP  ISTART ALL OVER BY GOING BACK
4032 004706' 000000 001603'
4033 004707' 000000 004703'
4034 004710' 001000 000311 57980  RET>
4035          57982  ITO NEWSTI POINTING AT THE START OF
4036 004711' 58000  INPUT: IOF THE "INPUT" STATEMENT
4037          58020  IFN  LENGTH,<
4038 004711' 001000 000376 58040  CPI  34
4039 004712' 000000 000042  IIS IT A QUOTE?
4040          58060  IFN  CUNTRM,<
4041 004713' 001000 000076 58080  MVI  A,0  IBE TALKATIVE

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BASIC MCS 8080	GATES/ALLEN/DAVIDOFF	MACRO 47(113) 03:12 10-SEP-75 PAGE 18-1
F3	MAC 6-SEP-64 03:11	INPUT AND READ CODE
4042 004714	000000 000000	
4043 004715	001000 000062	50100 STA CNTWFL> FORCE OUTPUT
4044 004716	000000 001541	
4045 004717	000000 004706	
4046 004720	001000 000302	50120 JNZ NOTGTI IF NOT NO MESSAGE
4047 004721	000000 004735	
4048 004722	000000 004716	
4049		
4050 004723	001000 000315	50140 IFN STRING,< STRLTI MAKE THE MESSAGE A STRING
4051 004724	000000 007640	50160 CALL
4052 004725	000000 004721	
4053 004726	001000 000317	50180 SYNCHK 59 MUST END WITH SEMI-COLON
4054 004727	000000 000073	
4055 004730	001000 000345	50200 PUSH H REMEMBER WHERE IT ENDED
4056 004731	001000 000315	50220 CALL STRPRT PRINT IT OUT
4057 004732	000000 007746	
4058 004733	000000 004724	
4059 004734	001000 000341	50240 POP H>
4060		
4061 004735	001000 000345	50260 IFE STRING,< STRUUI
4062		50280 CALL SYNCHK 59>> SENDS WITH SEMI-COLON
4063		50300 NOTGTI: PUSH H
4064		50320 IFE FUNCS,<
4065		50360 LHLD CURLIN IS IT DIRECT?
4066		50380 MWI E,ERR10 IF SO "ILLEGAL DIRECT" ERROR
4067		50400 INX H DIRECT MEANS THAT
4068		50420 MOV A,L JCURLIN#5535 JCURLIN#5535
4069		50440 ORA H ADDED ONE AND GOT 0?
4070		50460 JZ ERROR> IF SO,GO COMPLAIN
4071		50480 IFN FUNCS,< ENRDIN> USE COMMON ROUTINE SINCE DEF
4072 004736	001000 000315	50500 CALL
4073 004737	000000 007532	
4074 004740	000000 004732	
4075		
4076 004741	001000 000315	50520 GETAGN: CALL QINLIN DIRECT IS ALSO ILLEGAL
4077 004742	000000 002522	50540
4078 004743	000000 004737	
4079 004744	001000 000043	50560 IFN LENGTH,<INX H IF NO INPUT WE QUIT
4080 004745	001000 000176	50580 MOV A,M
4081 004746	001000 000067	50600 ORA A
4082 004747	001000 000053	50620 DCX H
4083 004750	001000 000301	50640 POP B TAKE OFF SINCE MAYBE LEAVING
4084 004751	001000 000312	50660 JZ STPEND IF EMPTY LEAVE
4085 004752	000000 003306	
4086 004753	000000 004742	
4087 004754	001000 000305	50680 PUSH B> PUT BACK SINCE DIDN'T LEAVE
4088 004755	001000 000303	50700 JMP INPCON
4089 004756	000000 004765	
4090 004757	000000 004752	
4091 004760	001000 000345	50720 READ: PUSH H SAVE THE TEXT POINTER
4092 004761	001000 000052	50740 LHLD DATPTN GET LAST DATA LOCATION
4093 004762	000000 001627	
4094 004763	000000 004756	

BASIC MCS 8080	GATES/ALLEN/DAVIDOFF	MACRO 47(113) 03:12 10-SEP-75 PAGE 18-2
F3	MAC 6-SEP-64 03:11	INPUT AND READ CODE
4095 004764	001000 000366	50760 XWD "01000,0366" ?ORI" TO SET [A] NON=ZERO
4096 004765	001000 000257	50780 INPCON: XRA A ?SET FLAG THAT THIS IS AN INPUT
4097 004766	001000 000062	50800 STA FLGINP ?STORE THE FLAG
4098 004767	000000 001602	
4099 004770	000000 004762	
4100		50820 ;
4101		50840 ; IN THE PROCESSING OF DATA AND READ STATEMENTS:
4102		50860 ; ONE POINTER POINTS TO THE DATA (IE THE NUMBERS BEING FETCHED)
4103		50880 ; AND ANOTHER POINTS TO THE LIST OF VARIABLES
4104		50900 ;
4105		50920 ; THE POINTER INTO THE DATA ALWAYS STARTS POINTING TO A
4106		50940 ; TERMINATOR -- A , 1 OR END-OF-LINE
4107		50960 ;
4108 004771	001000 000343	50980 XTHL ;(H,L)=VARIABLE LIST POINTER
4109		50982 ;DATA POINTER GOES ON THE STACK
4110 004772	001000 000001	50980 XWD "01000,1" ;"LXI B," OVER THIS CHECK
4111 004773	001000 000317	50920 LOPUT2: SYNCHK 44 ;MAKE SURE THERE IS A ","
4112 004774	000000 000054	
4113 004775	001000 000315	50940 CALL PTRGET READ THE VARIABLE LIST
4114 004776	000000 006505	
4115 004777	000000 004767	
4116		50960 ;
4117 005000	001000 000343	50980 XTHL ;AND GET THE POINTER TO A VARIABLE INTO [D,E]
4118		50980 ;PUT THE VARIABLE LIST POINTER ONTO THE
4119		50980 ;STACK AND TAKE THE
4120		50980 ;DATA LIST POINTER OFF
4121		50980 ;
4122		50980 ; NOTE AT THIS POINT WE HAVE A VARIABLE WHICH WANTS DATA
4123		50980 ; AND SO WE MUST GET DATA OR COMPLAIN
4124 005001	001000 000325	50920 PUSH D ;SAVE THE POINTER TO THE VARIABLE WE
4125		50920 ;ARE ABOUT TO SET UP WITH A VALUE
4126 005002	001000 000176	50920 MOV A,M ;SINCE THE DATA LIST POINTER ALWAYS POINTS
4127		50920 ;AT A TERMINATOR LETS READ THE
4128		50920 ;TERMINATOR INTO [A] AND SEE WHAT
4129		50920 ;IT IS
4130 005003	001000 000376	50940 CPI 44
4131 005004	000000 000054	
4132 005005	001000 000312	50960 JZ DATBK ;A COMMA SO A VALUE MUST FOLLOW
4133 005006	000000 005025	
4134 005007	000000 004776	
4135		
4136		50980 IFE LENGTH,<
4137		50980 ORA A ;IN THE 4K VERSION
4138 005010	001000 000072	50920 JNZ SNERR> ;DATA MUST BE ALONE ON A LINE
4139 005011	000000 001002	50940 LDA FLGINP ;SEE WHAT TYPE OF STATEMENT THIS WAS
4140 005012	000000 005006	
4141 005013	001000 000067	50960 ORA A
4142		50980 IFE LENGTH,<
4143		50980 INX H
4144		50980 JNZ DATFND> ;POINT AT POINTER TO NEXT LINE
4145		50940 ;IF IT IS A READ GO
4146 005014	001000 000302	50940 ;SEARCH FOR ANOTHER DATA STATEMENT
4147 005015	000000 005163	50960 IFN LENGTH,<JNZ DATLOP>