.

.

-

```
BASIC MCS 8080 GATES/ALLEN/DAVIDOFF
F3 MAC 6-SEP-64 03:11
                                                               MACRO 47(113) 03:12 10=SEP=75 PAGE 21
FURMULA EVALUATION CODE
                                                               00020 SUBTTL FORMULA EVALUATION CODE
   4471
4472
4473
                                                                                     LENGTH=2,<
STRING,<
                                                               00060
                                                               00000
                                                                            ; THESE ROUTINES CHECK FOR A CERTAIN VALTYP; [A] IS NOT PRESERVED
   4474
                                                               00100
                                                               00120
   4475
   4476
4477
4478
                                                               00160
                                                                            FRMNUM: CALL
                                                                                                      FRMEVL
*01000,*0366
                                                                                                                               FURN CARRY OFF WITH ORI
                                                                00180
                                                                            CHKNUM: XWD
CHKSTR: STC
CHKVAL: LDA
ADC
   4479
                                                                00200
                                                                                                                               JTURN CARRY OFF WITH ORI
JSET CARRY
JØ MEANS NUMERIC 1 MEANS STRING
JRESULT SHOULD BE Ø OR 3
   4480
                                                                00550
                                                                                                   VALTYP
   4481
                                                                00240
                                                                                                     A JRESULT SHOULD BE 0 OR 3
JBAD RESULTS ARE 2 AND 1
JRETURN IF CORRECT RESULT
E,ERRTH J"TYPE HISMATCH ERROR"
                                                                00260
   4483
                                                                00280
   4484
4485
4486
                                                               00300
                                                                                         RPF
                                                                            TMERR: MVI
                                                                00340
   4487
                                                                00360
                                                                               THE FORMULA EVALUATOR STARTS WITH (H,L) POINTING TO THE FIRST CHARACTER OF THE FORMULA, AT THE END (H,L) POINTS TO THE TERMINATOR, THE RESULT IS LEFT IN THE FAC.
   4488
4489
4490
                                                                00380
00400
00420
   4491
                                                                30440
   4492
                                                                99469
                                                                00480
                                                                               THE FORMULA EVALUATOR USES THE OPERATOR TABLE (OPTAB) TO DETERMINE PRECEDENCE AND DISPATCH ADDRESSES FOR
                                                                               EACH OPERATOR.
   4495
                                                                00520
                                                                               A TEMPORARY RESULT ON THE STACK HAS THE FOLLOWING FORMAT
   4496
                                                                00540
00560
00580
                                                                               THE ADDRESS OF "RETAOP" -- THE PLACE TO RETURN ON COMPLETION OF OPERATOR APPLICATION
   4499
                                                                00600
   4500
                                                                               THE FLOATING POINT TEMPORARY RESULT
                                                                            ; THE ADDRESS OF THE OPERATOR ROUNTINE
   4503
                                                                00680
   4500
                                                                            ; THE PRECEDENCE OF THE OPERATOR
                                                                            I TOTAL 10 BYTES
   4507
                                                                00760
   4508
                                                                00780
                                                                                         STRING, <FRMNUM:>
DCX H
MVI 0,0
                                                               00800
00820
00840
                                                                            IFE
           005336* 001000
005337* 001000
005340* 00000
005341* 001000
005342* 001000
005344* 000000
                                                                            FRMEVL: DCX
FRMCHK: MVI
                                                                                                                              BACK UP CHARACTER POINTER
   4511
                                      000000
                                                                           LPOPER: PUSH
CALL
                                                                                                                               ; SAVE PRECEDENCE
; MAKE SURE THERE IS ROOM FOR RECURSIVE CALLS
   4513
4514
4515
4516
                                      000325
000315
002024
005334
                                                               00860
                                                                                                      D
GETSTK
   4517
4518
4519
4520
           005345' 000000
005346' 001000
005347' 000000
005350' 000000
005351' 001000
005352' 000000
                                     000001
000315
006061*
005343*
                                                               00900
                                                                                         CALL
                                                                                                      EVAL
                                                                00920
                                                                                                                               PEVALUATE SOMETHING
   4521
                                      000042
                                                               00940
                                                                                       SHLD
                                                                                                     TEMP2
                                                                                                                              ISAVE TEXT POINTER
```

SASIC M	MAC MAC		LLEN/DAVIDOFF 64 03:11		TOTAL EVALUAT		SEP=75 PAGE 2	21+1
4523	005353*	000000	005347*					
4524			000052	00960	RETAOP:	LHLD	TEMP2	RESTORE TEXT PTR
4525	005355*	000000	001605*					
4526	005356*							
	005357*			00980	TSTOP:	POP	В	POP OFF THE PRECEDENCE OF OLDOP
4528				01000	IFN	LENGTH-	2,<	
4529				01020	IFN	STRING,		
4530				01040		MOV	A,B	ILOOK AT PRECEDENCE
4531				01060		CPI	120	IF ITS SOME ARITHMETIC
4532				01080				TYPE THING WE SHOULDN'T
4533				01100				ISEE STRINGS
4534				01120		CNC	CHKNUM>>	TYPE MISMATCH ERROR IF NOT NUMERIC
4535	005360*	001000	000176	01140	NOTSTV:	MOV	A,M	JGET NEXT CHARACTER
4536				01160	IFN	LENGTH,	4	
4537	005361	001000	000026	01180		MVI	0,0	ASSUME NO RELATION OPS
4538	005362							
4539	005363*			01200	LOPREL:	SUI	GREATK	IS THIS ONE RELATION?
4540								
4541	005365*			01220		JC	ENDREL	RELATIONS ALL THROUGH
4542			005415*					
4543			005355*					
4544			000003	01240	NMREL ==	LESSTK-GF	REATK+1	
	005370	001000		01260		CPI	NMREL	; IS IT REALLY RELATIONAL?
4546	005371*							
4547				01280		JNC	ENDREL	INO JUST BIG
	005373							
	005374							
4550		001000	000376	01300		CPI	1	SET UP BITS BY MAPPING
4551				0.300				
	005377			01320		RAL		;0 TO 1 1 TO 2 AND 2 TO 4
	005400			01340		XRA	D	BRING IN THE OLD BITS
4554			000272	01360		CMP	0	MAKE SURE RESULT IS BIGGER
4555				01380		MOV	D. A	ISAVE THE MASK
	005403*			01400		JC	SNERR	IDON'T ALLOW TWO OF THE SAME
4557			002072*	0.400		• •	•	, per i neger ine or life onlie
4558			005373					
4559			000042	01420		SHLD	TEMP3	SAVE CHARACTER POINTER
	005407			01450		0	162	TOTAL SHANDLEN LOTHIER
4561			005404*					
4562				01440		CHRGET		JGET THE NEXT CANDIDATE
4563	005412			01460		JMP	LOPREL	TOTAL THE MENT ONIDAYATE
4564			005363*	61406		on-	FOLKER	
4565			005407					
4566	005414			01480	ENDREL:	MOV	A,D	JGET THE MASK
4567	005415			01500	ENDKEL:	ORA	A	WERE THERE ANY?
4568				01520		JNZ	FINREL	IF SO, HANDLE AS SPECIAL OP
	005417	001000	000302	01250		2112	LIMEE	IT SU, MANUEL AS SPECIAL OF
	005420	000000	005005					
4570			005413*	01500		MOV	A W	TOET THE CHARACTED ACATA
	005422			01540			A,M	IGET THE CHARACTER AGAIN
	005423			01560		SHLD	TEMP3>	SAVE UPDATED CHARACTER POINTER
	005424							
	005425		005420	21522			DI 110 * W	*** **********************************
4575	005426	001000	000326	01580		201	PLUSTK	; AN OPERATOR?

3	MAC	6=3EP=	64 03:11	FURNUL	A EVALUAT	TON COOF			
4576	005427								
4577	005430	001000	000330	01600		RC			RETURN IF NOT
4578				01620					ITHIS CAN RESULT IN OPERATOR
4579				01640					JAPPLICATION OR ACTUAL RETURN
4580	005431'	001000	000376	01660		CPI	LSTOPK		HIGHER THAN THE LAST OP?
4581	0054321	000000	000007						
4582	0054331	001000	000320	01680		RNC			
4583	0054341	001000	000137	01700		MOV	E,A		MUST MUTIPLY BY 3 SINCE
4584				01720					JOPTAB ENTRIES ARE 3 LONG
4585				01740	IFN	STRING,	•		
4586	005435*	001000	000072	01760		LDA	VALTYP		ISEE IF LEFT PART IS STRING
4587	005436	999999	001543*						
4588	005437		005424*						
4589				01780	IFE	LENGTH-	. <		
4590	005440*	001000	000376	01800			3>		SEE IF ITS A STRING
4591	005441		000003			107507	5000		
4592				01820	IFN	LENGTH-	2,<		
4593				01840		DCR	A>		
4594	0054421	001000	000263	01860		ORA	E		ISET CONDITION CODES
4595				01880	IFN	LENGTH=	. «		,
4596				01900		MOV	A,E>		IREFETCH OP-VALUE
4597	005443*	001000	000312 -	01920		JZ	CAT>		IMUST BE CAT
4598	005444		010320*	08760			9.11		711001 00 041
4599	005445*		005436*						
4600	003443	000000	003430	01940	IFN	LENGTH-			
4601				01960		RLC			JA DRIGINAL A+2
4602				01980		ADD	Ε		JADD IN ORIGINAL A
4603				02000		MOV	E,A>		ICREATE TWO BYTE VALUE
4604				05050	IFE	LENGTH,			TORENTE THE DITE THEOE
4605				02040	2	MVI	0,0>		#HIGH ORDER #Ø
4606	005446*	001000	000041	95969		LXI	H, OPTAB		ICREATE INDEX INTO OPTAB
4607	005447		000163*	82.000					TENERIE INDEX INTO OFTED
4608	005450*		005444*						
4609	005451		000031	02080		DAD	0		JADD IN CALCULATED OFFSET
4610	005452*		000170	02100		MOV	A,B		I (A) GETS OLD PRECEDENCE
4611	005453		000126	02120		MOV	D. M		FREMEMBER NEW PRECEDENCE
4612	005454		000272	02140		CMP	0		JOLD=NEW
4613	005455		000320	02160		RNC	-		MUST APPLY OLD OP
4614	203433	001000	000000	02180					JIF HAS GREATER OR = PRECEDENT
4615				05500	IFN	LENGTH-			TE HAS BREATER OR . PRECEDENT
4616				05550	41.14		H		INOW POINTING AT ROUTINE ADDRE
4617				02220	IFN	STRING,		CHKMIINS	JCAN T BE STRING HERE
4618				05590	41.14	OINTHO,		CHANONS	ISINCE THE DNLY STRING OPERATO
4619				08220					IS PLUS AND RELATIONALS
4620				02300					DON'T COME THROUGH HERE
4621				02320	DOPREC:	DUEL	В		
4622				02340	DOFREC:	LXI	B. RETAD	n	ISAVE OLD PRECEDENCE IOPERATOR RETURN ADDRESS
4623				02360		PUSH	BIRETAU	2	
4624					IFN	LENGTH.			FIRST PART OF "TEMP" ENTRY
				02380	TEN		B.E>		TO THE SECOND BATE OF BOLLEGE
4625				02400		MOV	0,0>		ISAVE SECOND BYTE OF PRECEDENC
4626				02420					ISINCE FOR RELATIONAL OPERATOR
4627				02440					IT GIVES THE VALUE TYPE OF
4628				02460					THE LEFT SIDE AND IT TELLS

	BASIC M	CS 8080 MAC		LLEN/DAVIDOFF 64 03:11			3:12 10=	SEP=75 PAGE 21-3	
	4629				02480				WHICH RELATIONAL OPERATOR
١	4630				02500				IIT WAS
	4631				02520		MOV	C, D	
	4632				02540		CALL	PUSHF	
	4633				02560	IFN	LENGTH,	<	
	4634				02580		MOV	E,8>	IGET SECOND BYTE OF PRECEDENCE AGAIN
	4635				02600		MOV	0,0	(D) GETS PRECEDENCE
	4636				02620		PUSHM		IPUT ROUTINE ADDRESS ON THE STACK
	4637				02640	IFN	LENGTH,	<	
	4638				02660		LHLD	TEMP3>	
	4639				02680	IFE	LENGTH,		
	4640				02700		LHLD	TEMP2>	IIF WE DON'T HAVE "LENGTH"
	4641				02720				ION OPERATORS CAN ONLY
	4642				02740				IBE ONE CHARACTER SO TO "REREAD"
	4643				02760				JAN OPERATOR THAT WE LOOKED
	4644				02780				JAT BEFORE AND DECIDED NOT TO
	4645				02800				JAPPLY WE JUST "DCX H"
	4646				02820				IF LENGTH IS ON WE HAVE TO
	4647				02840				FREMEMBER THE TEXT POINTER BEFORE
	4648				02860				THE OPERATOR AND AFTER SO WE CAN
	4649				02880				JEITHER RESCAN THE OPERATOR
	4650				02900				ILATER IF IT DOESN'T GET APPLIED
,	4651				02920				JOR GO BEYOND IT WHEN IT DOES
	4652				02940		JMP	LPOPER>	IPUT ON PRECEDENCE AND LOOK AT A
	4653				02960				INEW OPERATOR
	4654								
	4655				03000	IFE	LENGTH-	2,4	
	4656	005456	001000	000305	03020		PUSH	8	ISAVE THE OLD PRECEDENCE
,	4657	005457	001000	000001	03040		LXI	B, RETAUP	IPUT ON THE ADDRESS OF THE
	4658	005460	000000	005354*					
	4659	005461	000000	005447*					
	4660				03060		PUSH	9	IPLACE TO RETURN TO AFTER OPERATOR APPLICATIO
	4661	005462	001000	000305					
	4662	005463*	001000	000172	03080		MOV	A,D	ISEE IF THE OPERATOR IS EXPONENTIATION
	4663	005464*	001000	000376	03100		CPI	127	WHICH HAS PRECEDENCE 127
	4664	005465	000000	000177					
	4665				03120		JZ	EXPSTK	; IF SO, "FRCSNG" AND MAKE A SPECIAL STACK ENT
	4666	005466	001000	000312					
	4667	005467	000000	005553*					
	4668	005470	000000	005460*					
	4669		001000	000376	03140		CPI	81	ISEE IF THE OPERATOR IS "AND" OR "OR"
	4670	005472		000121					
	4671		001000	000332	03160		JC	ANDORD	; AND IF SO "FRCINT" AND
	4672	005474	000000	005571*					
	4673	005475	000000	005467*					
	4674			Control actions	03162				IMAKE A SPECIAL STACK ENTRY
	4675				03200	,			
	4676				03220	; THIS	CODE PUS	HES THE CURRENT	VALUE IN THE FAC
	4677				03240				CASE OF STRINGS IN WHICH IT CALLS
	4678				03260				(E) ARE PRESERVED.
	4679				03280	,			
	4680	005476*	001000	000072	03300	NUMREL	LDA	VALTYP	IGET THE VALUE TYPE
	4681		999999						

A

F3	MCS 8080 MAC	GATES/ALLEN/DAVIDOFF 6=SEP=64 03:11		MACRO 47(113) 03:12 10=SEP=75 PAGE 21=4 FORMULA EVALUATION CODE						
468	2 005500	000000	005474*							
468	3 005501	001000	000376	03302		CPI	3	JAND SET THE CONDITION CODES BASED ON I		
468	905502	000000	000003							
468	5 005503*	001000	000312	03320		JZ	TMERR	#BLOW UP ON STRINGS		
468		000000	0000000*					70000 01 01 01 01		
468	7 005505	000000	005477*							
468		001000	000041	03340		LXI	H, FACLO	JGET POINTER TO LO IN FAC		
468		000000						7007 1021101 10 00 11 110		
469		000000	005504*							
469	1 005511*	001000	000116	03342		MOV	C,M			
469		001000	000043	03344		INX	н			
469		001000	000106	03346		MOV	B , M			
469			000043	03348		INX	н			
469		001000	000305	03360		PUSH	8	PUSH FACLO+0.1 ON THE STACK		
469		001000		03380		JM	VPUSHD	FALL DONE IF THE DATA WAS AN INTEGER		
469		000000	005536*					,		
469		0000000	005507*							
469		001000		03382		MOV	C.M			
470		001000	000043	03384		INX	H			
470			000106	03386		MOV	B . M			
470		001000		03388		INX	н			
470		001000		03400		PUSH	8	PUSH FAC-1,0 ON THE STACK		
470		001000		03420		JPO	VPUSHD	FALL DONE IF WE HAD A SNG		
478		000000	005536*					1 MEE 5010 11 NO 110 N 0110		
470		000000								
476		001000	000041	03440		LXI	H. DFACLO	WE HAVE A DOUBLE PRECISON NUMBER		
476		000000	001633*	02440			,	THE WATER POOPER INCETAGE HOUSEN		
470		000000								
471		001000	000367	03460		PUSHM		PUSH ITS 4 LO BYTES ON THE STACK		
471		001000	000367	03480		PUSHM		TOOK STO TO DITED ON THE STACK		
471		001000	000113	03520	VPUSHD:		C,E	(C) =OPERATOR NUMBER		
471		001000		03560	561101	MDV	B, A	I (B) = TYPE OF VALUE ON THE STACK		
471		001000	000305	03580		PUSH	8	ISAVE THESE THINGS FOR APPLOP		
471		001000	000001	03600		LXI	B.APPLOP	IGENERAL OPERATOR APPLICATION		
471		000000	005642*	03000			O AFFECT	ABENEVAL OFERRIOR MELETCHITON		
471		000000								
471		000000	003335.	03620				ROUTINE DOES TYPE CONVERSIONS		
471		001000	000305	03640	FINTMP:	PHSH	8	SAVE PLACE TO GO		
472		001000		03660	. Adding .	LHLD	TEMP3	REGET THE TEXT POINTER		
472		0000000		93000		F11.FD	I Enr. 3	THE SELL LOTAIES		
472		000000	005542*							
472		001000	000303	03680		JMP	LPOPER	IPUSH ON THE PRECEDENCE AND READ MORE		
472		0000000	005341*	03000		onr.	C. OFER	THOUSE ON THE PRECEDENCE AND READ MORE		
472		999999	005546*							
472		SABABAR	2000040	03700				FORMULA		
472				03720				/ FORMULA		
472				03740	; FOR 5	PONENT		FORCE THE CHORENT WALLE IN THE CAC		
472								FORCE THE CURRENT VALUE IN THE FAC		
				03760				APPLICATION TIME COMES WE FORCE		
473 473				03780	I THE R	TON! HA	NO OPERAND TO SIN	GLE PRECISION AS WELL		
		001000	000715	03800	EVDOT		COCONC	**************************************		
473		001000	000315	03820	EXPSTK:	LALL	FRESNG	COERCE LEFT HAND OPERAND		
473		000000	003256*							
473	יככככטש ו	000000	005551*							

BASIC MCS 8080 F3 MAC		GATES/ALLEN/DAVIDOFF 6=SEP=64 03:11		MACRO 47(113) 03:12 10-SEP-75 PAGE 21-5 FORMULA EVALUATION CODE						
4735	005556	001000	000315	03840		CALL	PUSHF	PUT IT ON THE STACK		
4736	005557	000000	0000000*							
4737			005554*							
4738			000001	03860		LXI	B, FPWRQ##	IPLACE TO COERCE RIGHT HAND		
4739	005562*	000000	900000±							
4740		000000	005557*							
4741				03880				OPERAND AND DO EXPONENTIATION		
4742	005564	001000	000026	03900		MVI	D,127	RESTORE THE PRECEDENCE		
4743			000177							
4744			000303	03920		JMP	FINTMP	FINISH ENTRY AND EVALUATE MORE FORMULA		
4745			005544*							
4746	005570	000000	005562*							
4747				03940	,					
4748				03960	FOR "A	ND" A	ID "OR" WE WANT TO	O FORCE THE CURRENT VALUE IN THE		
4749				03980				APPLICATION TIME FORCE THE RIGHT		
4750				04000	; HAND O	PERANE	TO BE AN INTEGE	R		
4751				04020	;					
4752	005571	001000	000325	04040	ANDORD:	PUSH	D	ISAVE THE PRECEDENCE (70 OR 80)		
4753	005572	001000	000315	04060		CALL	FRCINT			
4754	005573	000000	003630*							
4755	005574	000000	005567*							
4756			000321	04080		POP	D	; [D] #PRECEDENCE		
4757			000345	04100		PUSH	н	PUSH THE LEFT HAND OPERAND		
4758	005577	001000	000001	04120		LXI	B, DANDOR	"AND" AND "OR" DOER		
4759	005600	000000	006437*							
4760	005601'	000000	005573*							
4761			000303	04140		JMP	FINTMP	IPUSH ON THIS ADDRESS, PRECEDENCE		
4762			005544							
	005604	000000	005600							
4764				04160				AND CONTINUE EVALUATION		
4765				04180	;					
4766				04200	I HERE T	O BUIL	D AN ENTRY FOR A	RELATIONAL OPERATOR		
4767				04220				Y. NUMERIC COMPARES ARE DIFFERENT		
4768				04240	; FROM M	OST OF	PERATOR ENTRIES D	NLY IN THE FACT THAT AT THE		
4769				04260	; BOTTOM	INSTE	AD OF HAVING RET	AOP, DOCMP AND THE RELATIONAL		
4770				04280				E STRCMP, THE POINTER AT THE STRING DESCRIPTOR		
4771				04300	; DOCMP	AND TH	E RELATIONAL BIT	S.		
4772				04320	,					
4773	005605		000170	04340	FINREL:		A,B	; [A] =OLD PRECEDENCE		
4774			000376	04360		CPI	100	FRELATIONALS HAVE PRECEDENCE 100		
4775	005607		000144							
4776	005610	001000	000320	04380		RNC		JAPPLY EARLIER OPERATOR IF IT HAS		
4777				04400				HIGHER PRECEDENCE		
4778			000305	04420		PUSH	В	ISAVE THE OLD PRECEDENCE		
4779			000325	04440		PUSH	0	SAVE [D] = RELATIONAL BITS		
4780	0056131		000021	04460		LXI	D,\$CODE+25604	[D] =PRECEDENCE=100		
4781			062004							
4782	005615	000000	005603*							
4783				04480				(E) =DISPATCH OFFSET FOR		
4784				04500				COMPARES IN APPLOP=4		
4785				04520				IN CASE THIS IS A NUMERIC COMPARE		
	005616		000041	04540		LXI	H, DOCHP	FROUTINE TO TAKE COMPARE ROUTINE RESULT		
4787	005617	000000	006375							

A

BASIC MCS 8080				MACRO 47(113) 03:12 10=SEP=75 PAGE 21=6					
F3 MAC		6=SEP=64 03:11		FORMUL	A EVALUATION CODE				
4788	0056201	000000	005614*						
4789				04560			JAND RELATIONAL BITS AND RETURN THE ANSWER		
4790	005621*	001000	000345	04580	PUSH	н	IDDES A JMP TO RETAUP WHEN DONE		
4791	005622*		000315	04600	CALL	GETYPE	ISEE IF WE HAVE A NUMERIC COMPARE		
4792	005623*	000000	006307*						
4793			005617*						
4794		001000	000302	04620	JNZ	NUMREL	TYES, BUILD AN APPLOP ENTRY		
4795	005626*	000000	005476*	04060	0.12	HOHREE	LICO, DOTED WE WELFOL FRIEN		
4796	005627		005623*						
4797			000052	04640	LHLD	FACLO	JGET THE POINTER AT THE STRING DESCRIPTOR		
4798	005631		001637	04040	Enco	FAGEO	JOET THE POINTER AT THE STRING DESCRIPTOR		
4799	005632								
4800				0.066.0	Push	N.	ACAME IN COR OTROUB		
4801	005633		000345	04660		A CTOCHO	SAVE IT FOR STRCMP		
	005634		000001	04680	LXI	B, STRCMP	STRING COMPARE ROUTINE		
4802	005635	000000	006320						
4893		000000	005631"						
4894	005637		000303	04700	JMP	FINTMP	PUSH THE ADDRESS, REGET THE TEXT POINTER		
4805	005640*		005544*						
4806	005641	909000	005635						
4807				04720			ISAVE THE PRECEDENCE AND SCAN		
4808				04722			MORE OF THE FORMULA		
4809				04740	,				
4810				04760	; APPLOP IS RET	JRNED TO WHEN I	T IS TIME TO APPLY AN ARITHMETIC		
4811				04762	I OR NUMERIC COM	MPARISON OPERAT	ION.		
4812				04764	; THE STACK HAS	A DOUBLE BYTE	ENTRY WITH THE OPERATOR		
4813				04766			VALUE ON THE STACK.		
4814				04768	APPLOP DECIDES	S WHAT VALUE LE	VEL THE OPERATION		
4815				04770			THE ARGUMENTS. APPLOP		
4816				04772			NTIONS FOR EACH VALUE TYPE.		
4817				04776	; INTEGERS: LEF				
4818				04778			RIGHT IN THE FAC		
4819				04780	; DOUBLES: LEFT				
4820				04798	1		1 11 113		
4821	0056424	001000	000301	04800	APPLOP: POP	В	I [B] #STACK OPERAND VALUE TYPE		
4822	003045	001000	000001	04820	HITEOTT FOR		ICT = OPERATOR OFFSET		
4823	005643*	991999	000171	04840	MOV	A,C	ISAVE IN MEMORY SINCE THE STACK WILL BE BUSY		
4824			000065	04860	STA	OPRTYP	A RAM LOCATION		
4825	005645		001544*	84000	SIA	OF MITT	IN DAD COCKLION		
4826									
				0.0000	MOV		ACHECK COS DOUGLE		
4827	005647		000170	04880		A, B	CHECK FOR DOUBLE		
4828			000376	04900	CPI	8	PRECISION ENTRY ON THE STACK		
4829			000010						
4830	005652		000312	04920	JZ	STKDBL	FORCE FAC TO DOUBLE		
4831	005653		005725						
4632			005645				The Bottom Control of the Control of		
	005655		000072	04940	LDA	VALTYP	ISEE IF THE FAC IS DOUBLE PRECISION		
4834	005656		001543						
	005657		005653*						
4836	005660		000376	04960	CPI	8	AND IF SO, CONVERT THE STACK OPERAND		
4837	005661	000000	000010						
4838	005662		000312	04980	JZ	FACOBL	ITO DOUBLE PRECISION		
4839	005663		005775*						
4840	005664*								

			GATES/ALLEN/DAVIDOFF 6=SEP=64 03:11		MACRO 47(113) 03:12 10-SEP=75 PAGE 21=7 FORMULA EVALUATION CODE						
	4841	005665*	901989	000127	05000		MOV	D.A	SAVE THE VALUE TYPE OF THE FAC		
	4842	005666			05020		MOV	A,B	ISEE IF THE STACK ENTRY IS SINGLE		
	4843	005667	001000	000376	05040		CPI	4	PRECISION AND IF SO, CONVERT		
	4844								,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
•	4845	005671	001000	000312	05060		JZ	STKSNG	THE FAC TO SINGLE PRECISION		
٠	4846		999999	006021"							
	4847	005673									
•	4848				05080		MOV	A.D	ISEE IF THE FAC IS SINGLE PRECISION		
	4849	005675			05100		CPI	3	JAND IF SO CONVERT THE STACK TO SINGLE		
	4850	005676*	999999	000003							
	4851				05120		JNC	FACSNG	PRECISION		
	4852	005700									
	4853	005701									
	4854				05140				INOTE: THE STACK MUST BE INTEGER AT THIS POINT		
	4855	005702*	001000	000312	05160		JZ	TMERR	IBLOW UP ON RIGHT HAND STRING OPERAND		
	4856	005703									
	4857	005704*									
	4858				05180		LXI	H, INTOSP	INTEGER INTEGER CASE		
	4859	005706	000000	000716*							
	4860	005707									
-	4861	005710			05200		MVI	B, 0	ISPECIAL DISPATCH FOR SPEED		
	4862										
	4863				05220		DAD	8	I (H, L) POINTS TO THE ADDRESS TO GO TO		
-	4864	005713			05240		DAD	8			
	4865	005714			05260		MOV	C.M	; [B, C] = ROUTINE ADDRESS		
	4866	005715	001000	000043	05280		INX	Н			
_	4867	005716	001000	000106	05300		MOV	B . M			
		005717			05320		POP	0	; [D, E] =LEFT HAND OPERAND		
	4869	0057201			05340		LHLD	FACLO	(H,L)=RIGHT HAND OPERAND		
_	4870										
	4871	005722									
	4872				05360		PUSH	В	IDISPATCH		
_	4873				05380		RET				
	4874				05400	;					
•	4875				05420	THE S	TACK OF	ERAND IS DOUB	LE PRECISION, SO		
•	4876				05440				DOUBLE PRECISION, MOVED INTO ARG		
	4877				05460			K VALUE POPED			
	4878				05480	,					
11	4879	005725*	001000	000315	05500	STKOBL:	CALL	FRCDBL	MAKE THE FAC DOUBLE PRECISION		
	4880	005726									
•	4881	005727									
_	4882				05520		CALL	VMOVAF	IMOVE THE FAC INTO ARG		
	4883	005731									
	4884	005732									
-	4885				05540		POP	н	IPOP OFF THE STACK OPERAND INTO THE FAC		
	4886	005734			05560		SHLD	DFACLO+2	The second secon		
	4887	005735	000000	001635*							
	4888		999999	005731							
	4889	005737*			05580		POP	н			
	4890				05600		SHLD	DFACLO	ISTORE LOW BYTES AWAY		
	4891								701-1-2-10-10-10-1		
	4892										
		005743			05620	SNGDBL:	POPR		JPOP OFF A FOUR BYTE VALUE		
				000000	02050						