

MP05	000302R	MULPLY	000000RG	MULT01	000016R
MULT02	000030R	MULT03	000032R	MULT04	000040R
MULT05	000052R	MULT06	000064R	MULT07	000076R
MULT08	000110R	MULT09	000122R	MULT10	000134R
MULT11	000146R	MULT12	000160R	MULT13	000172R
MULT14	000204R	MULT15	000216R	MULT16	000230R
MULT17	000242R	MULT18	000254R	MZERO	000276R
PC	=%000007	R0	=%000000	R1	=%000001
R2	=%000002	R3	=%000003	R4	=%000004
R5	=%000005	R6	=%000006	R7	=%000007
SP	=%000006		= 000304R		

END ?

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# BLITZKRIEG INTEGER MULTIPLY

VERSION 2B

LARRY BRYANT & BILL SEILER

AUG 19, 1974

MULT TWO SINGLE WORD INTEGERS TO PRODUCE  
A DOUBLE WORD RESULT

R0=MULTIPLIER (UNCHANGED BY ROUTINE)

R1=USED AS A FLAG

R3=LOW WORD RESULT

R4=MULTIPLICAN & HIGH WORD RESULT

000000	R0=%0
000001	R1=%1
000002	R2=%2
000003	R3=%3
000004	R4=%4
000005	R5=%5
000006	R6=%6
000007	R7=%7
000006	SP=R6
000007	PC=R7

.TITLE MULPLY  
.GLOBL MULPLY

000000 .CSECT

000000	005001	MULPLY:	CLR	R1	; CLEAR FLAG REGISTER
000002	005003		CLR	R3	; CLEAR LOW ORDR RESULT
000004	005700		TST	R0	; NEGATIVE MULTIPLIER?
000006	001533		BEQ	MZERO	; MAKE ZERO FAST
000010	003002		BGT	MULT01	; POSITIVE, GO AROUND
000012	005201		INC	R1	; SET NEGATIVE FLAG
000014	005400		NEG	R0	; MAKE POSITIVE
000016	005704	MULT01:	TST	R4	; TEST MULTIPLICAND
000020	001526		BEQ	MZERO	; IF ZERO GO AWAY
000022	003002		BGT	MULT02	; IF + JUMP AROUND
000024	005201		INC	R1	; INC NEGATIVE FLAG
000026	005404		NEG	R4	; MAKE POSITIVE
000030	006304	MULT02:	ASL	R4	; "
000032	006304	MULT03:	ASL	R4	; "
000034	103001		BCC	MULT04	; SKIP IF NO CARRY
000036	060003		ADD	R0, R3	; ADD IN MULTIPLICAND
000040	006303	MULT04:	ASL	R3	; SHIFT MAGNITUDE AGIN
000042	006104		ROL	R4	; "
000044	103002		BCC	MULT05	; SKIP AGAIN IF NO CARRY
000046	060003		ADD	R0, R3	; ADD IN MULTIPLICAND
000050	005504		ADC	R4	; ADD LOW ORDER OVERFLOW
000052	006303	MULT05:	ASL	R3	; DO IT AGAIN
000054	006104		ROL	R4	

000056	103002	BCC	MULT06	
000060	060003	ADD	R0, R3	
000062	005504	ADC	R4	
000064	006303	MULT06: ASL	R3	; DO IT AGAIN!

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000066	006104	ROL	R4	
000070	103002	BCC	MULT07	
000072	060003	ADD	R0, R3	
000074	005504	ADC	R4	
000076	006303	MULT07: ASL	R3	; DO IT AGAIN!!
000100	006104	ROL	R4	
000102	103002	BCC	MULT08	
000104	060003	ADD	R0, R3	
000106	005504	ADC	R4	
000110	006303	MULT08: ASL	R3	; DO IT AGAIN!!!
000112	006104	ROL	R4	
000114	103002	BCC	MULT09	
000116	060003	ADD	R0, R3	
000120	005504	ADC	R4	
000122	006303	MULT09: ASL	R3	; DO IT DO IT DO IT!
000124	006104	ROL	R4	
000126	103002	BCC	MULT10	
000130	060003	ADD	R0, R3	
000132	005504	ADC	R4	
000134	006303	MULT10: ASL	R3	; DO IT, DO IT, DO WHOW!
000136	006104	ROL	R4	
000140	103002	BCC	MULT11	
000142	060003	ADD	R0, R3	
000144	005504	ADC	R4	
000146	006303	MULT11: ASL	R3	; --- HO BOY! ---
000150	006104	ROL	R4	
000152	103002	BCC	MULT12	
000154	060003	ADD	R0, R3	
000156	005504	ADC	R4	
000160	006303	MULT12: ASL	R3	; THIS IS TOO MUCH!
000162	006104	ROL	R4	
000164	103002	BCC	MULT13	
000166	060003	ADD	R0, R3	
000170	005504	ADC	R4	
000172	006303	MULT13: ASL	R3	; GETTING BORING?
000174	006104	ROL	R4	
000176	103002	BCC	MULT14	
000200	060003	ADD	R0, R3	
000202	005504	ADC	R4	
000204	006303	MULT14: ASL	R3	; LA LA DA DA DA LA LA DAA
000206	006104	ROL	R4	
000210	103002	BCC	MULT15	
000212	060003	ADD	R0, R3	
000214	005504	ADC	R4	
000216	006303	MULT15: ASL	R3	; FAST IS WEIRD!!
000220	006104	ROL	R4	
000222	103002	BCC	MULT16	
000224	060003	ADD	R0, R3	
000226	005504	ADC	R4	
000230	006303	MULT16: ASL	R3	; COME ON , COME ON!
000232	006104	ROL	R4	
000234	103002	BCC	MULT17	
000236	060003	ADD	R0, R3	
000240	005504	ADC	R4	
000242	006303	MULT17: ASL	R3	; I CANT BELIEVE IT!
000244	006104	ROL	R4	

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000246	103002	BCC	MULT18	
000250	060003	ADD	R0, R1	
000252	005504	ADC	R4	; --- FINNALLY DONE SHIFT-ADDING!!
000254	012701	MULT18: BIT	#1, R1	; LOOK AT SIGN BIT
	000001			
000260	001410	BFO	MP05	; RESULT IS + JUMP AROUND
000262	005103	COM	R3	; DOUBLE PRECISION
000264	005104	COM	R4	; NEGATION OF
000266	000241	CLC		; CLEAR FOR TWO'S COMPLMNT
000270	005203	INC	R3	; PRODUCT
000272	005504	ADC	R4	; "
000274	000402	BR	MP05	; SKIP ZERO ROUTINE
000276	005003	MZERO: CLR	R3	; MULTIPLY BY ZERO
000300	005004	CLR	R4	; "
000302	000207	MPOS: RTS	PC	; LEAVE THIS PLACE!
	000001	END		

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000000 ERRORS

PAI-115 V003A

\*S H

\*B H

\*L T

\*T T