

RECOMP II USERS' PROGRAM NO. 1150

PROGRAM TITLE: COMPLEX ARITHMETIC WITH MODIFIED SQUARE
ROOT AND TRACE ON SENSE SWITCH D
(Modification of RECOMP II PROGRAM NO. 35)

PROGRAM CLASSIFICATION: General

AUTHORS: S. Robert Cassarino
Joan Van Horn
SYLVANIA ELECTRONIC SYSTEMS

PURPOSE: To modify Complex Arithmetic Package to
handle a complex square root when the
imaginary part of the number is either
zero or smaller than the real part
by 10^7 . The other modification provides
for a trace of complex operations.

DATE: June 1962

Published by

RECOMP Users' Library

at

AUTONETICS INDUSTRIAL PRODUCTS

A DIVISION OF NORTH AMERICAN AVIATION, INC.

3400 East 70th Street, Long Beach 5, California

DISCLAIMER

Although it is assumed that all the operations have been
tested and are correct, the user should be aware that they
are not guaranteed. The user should be aware that the
program is not intended for use in a critical application
and that the user should be aware that the program is
not intended for use in a critical application. Any
use of the program is at the user's own risk and is
not intended for use in a critical application. The
program is provided as a service to the user and is
not intended for use in a critical application.

PROGRAM TITLE: COMPLEX ARITHMETIC WITH MODIFIED SQUARE ROOT
AND TRACE ON SENSE SWITCH D
(Modification of RECOMP II PROGRAM NO. 35)

I Square Root Modification

1. Allows for correct computation of the complex square root when the imaginary part of the number is either zero or smaller than the real part by about 10^5 . If the real or imaginary part of any complex number is zero the exponent must also be zero, since it may be used to calculate the range of the difference between real and imaginary parts. Some floating decimal input routines enter 47_8 as the exponent with a zero mantissa. These must be avoided when entering data.
2. The accuracy of the complex square root should not be assumed greater than four significant digits.

PROGRAM TITLE: COMPLEX ARITHMETIC WITH MODIFIED SQUARE ROOT
AND TRACE ON SENSE SWITCH D
(Modification of RECOMP II PROGRAM NO. 35)

II Trace option

Complex Arithmetic with modified square root and trace on sense switch D.

1. Trace option prints current location being executed and the contents of the complex accumulator after execution of the current complex command.
Only the final answer of the complex command is traced.
2. Print routine ANO14 assumed to be in 7400. If another location is desired, the transfer address in locations 0435 and 0437 must be changed accordingly. If less than 13₈ digits are desired in the output the address portions of 0436.0 (for real part) and 0440.0 (for imaginary part) must be changed accordingly. The number of digits is restricted to NN where $2 \leq NN \leq 13$ in octal.
3. To trace on a different sense switch, change the op codes in 0430.0 and 0442.0.
4. Toggle switch under typewriter cover should be set to c/R.
5. Prog. occupies locations 0000 - 0467 and 7400-7637.

Square Root Modification

<u>Location</u>	<u>Word Modified</u>			
0400	00	7776.0	50	0406.0
1	51	0423.0	00	7775.0
2	52	0403.1	64	0320.0
3	57	7760.0	00	7775.0
4	03	7777.0	03	0407.0
5	52	0406.0	57	0402.1
6	64	0410.0	57	7760.0
7	00	0000.0	-00	0007.0
0410	30	7774.0	51	7764.0
1	44	7774.0	35	7774.0
2	30	7766.0	35	7776.0
3	64	0340.0	57	7762.0
4	00	7774.1	60	7774.0
5	64	0420	57	7760.0
6	00	0000.0	-00	0000.0
7	00	0000.0	-00	0000.0
0420	44	7774.0	35	7776.0
1	30	7766.0	35	7774.0
2	64	0340.0	57	7762.0
3	00	7775.0	52	0403.1
4	00	7777.1	03	7775.1
5	03	0407.0	51	0405.0
6	00	0000.0	-00	0000.0
7	00	0000.0	-00	0000.0

Trace Option Modification

<u>Location</u>		<u>Word Modified</u>		
0430	56	0431.0	57	0441.1
1	00	7770.0	03	0447.0
2	51	0441.1	72	0010.0
3	12	7770.0	65	0450.0
4	67	0460.0	72	0010.0
5	30	0464.0	57	7400.0
6	00	0013.0	72	0004.0
7	30	0466.0	57	7400.0
0440	00	0013.0	64	0450.0
1	66	0460.0	57	(0000.0)
2	56	0443.0	57	(0000.0)
3	00	0442.0	42	0441.1
4	03	0446.0	42	7770.1
5	57	0432.1	77	0445.1
6	00	0000.0	00	0000.1
7	00	0000.0	00	0447.1
0101	42	0441.1	00	7771.0
0105	35	7776.0	57	0430.0
0111	42	0441.1	00	7771.0
0115	35	7776.0	57	0430.0
0123	42	0441.1	30	0000.0
0127	35	7776.0	57	0430.0
0133	42	0441.1	34	0000.0
0137	35	7776.0	57	0430.0
0145	42	0441.1	41	0000.1
0146	41	0000.0	57	0430.0

Trace Option Modification

<u>Location</u>	<u>Word Modified</u>		
0171	42	0441.1	57 0430.0
0201	42	0442.1	00 7771.0
0212	60	0022.0	57 0442.0
0222	01	7766.0	42 0441.1
0227	35	7776.0	57 0430.0
0231	42	0441.1	00 7771.0
0232	42	0237.1	57 0430.0
0242	01	7767.0	42 0441.1
0246	41	0000.0	57 0430.0
0252	01	7767.0	42 0441.1
0256	41	0000.0	57 0430.0
0262	01	7767.0	42 0441.1
0266	41	0000.0	57 0430.0
0271	42	0441.1	30 7764.0
0273	41	0000.0	57 0430.0
0305	42	0441.1	41 0000.1
0306	41	0000.0	57 0430.0
0311	42	0441.1	30 7776.0
0316	41	0000.0	57 0430.0
0343	42	0441.1	41 0000.1
0344	41	0000.0	57 0430.0
0361	42	0441.1	02 7776.0
0362	60	7776.0	57 0430.0
0372	42	0441.1	00 7774.0
0375	41	0000.0	57 0430.0