

RECOMP II USERS' PROGRAM NO. 1085

PROGRAM TITLE: SOLUTION OF SIMULTANEOUS LINEAR EQUATIONS

PROGRAM CLASSIFICATION: General

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PURPOSE: To solve a set of simultaneous linear equations. The program handles a maximum of thirty-six equations with thirty-six unknowns. The equations are evaluated using the coefficients obtained from the solution, and these values are then printed and compared with the original input values.

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- A. Clear disk (-0); enter program tape and verify.
- B. Start "1"; enter in number fill (N) at L0011.0 (+K.), enter key, where K is the number of unknowns. Push start key.
- C. Enter equation values in mixed fixed point decimal notation (N) beginning at L1000.0. Enter in order $A_{11}, A_{12}, \dots, A_{1K}, B_1, A_{21}, \dots, A_{2K}, B_2$ etc. When all values are entered, the location counter should contain an even numbered location where a transfer command is stored. If it does not, an entry error was made. Push start key to continue. All values must have both an integral and a fractional part.
- D. The numbers are floated and printed for verification. The computer then stops at L0034.1. If the values are correct, advance the tape in the punch and push start key. The values are then punched on tape for later use in evaluating equations. If no tape is desired place sense switch "B" on, and then push start key.
- E. The coefficients obtained from solving equations are printed in order in a column. If the matrix is singular, the machine halts at L0040.0 and, consequently, no answers are obtained. The machine halts at L0003.0 when the printing of the coefficients is complete. (The coefficients are in memory at 0600, etc.)
- F. The program will evaluate the equations using the coefficients by entering the tape prepared in step D. Start "3" to continue. Three columns are printed containing Y actual, Y calculated and the difference (Y actual - Y calculated) for each equation.

NOTE: The tape prepared in step D may be used later with the following procedure:

1. Execute steps A and B.
2. Enter previously prepared tape into machine.
3. Modifications are made manually in the appropriate octal locations.
4. Manually float only the modifications by entering three commands in L7000.0.

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+57 66500 + 00XXXXX0
+00 ZZZZO + 00ZZZZO
+77 70000 - 0000000

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Denote the number of values to be floated in octal by XXXX.
Denote the location of the first value by ZZZZ. Set location counter to 7000.0 and push start key.

5. Start "2" after all modifications are entered and floated. Return to step D (step C is omitted).