Linear Programming

Solves a Linear Programming problem in **canonical form** by Dantzig's *simplex method*.

Execute

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iOpt	max	*Max*imization or *min*imization.
n	5	No. of *variables* (structural, slack, artificial). •
P^T	Objective function coefficients • 20 30 0 0 0	
A	Constraint matrix (*row*, then *RHS* of equality <*ret*> new *row* …) • .01 .075 1 0 0 1500 .08 .1 0 1 0 1200 .05 .15 0 0 1 1500	
Initial basis	Variables' indices • 3 4 5	
Show	b+rc	Show intermediate steps: bases (b), reduced costs (rc), matrices (m).

Solves a Linear Programming problem in "canonical" form, i.e., with **equations only** and $x_i = 0$.

The constraint matrix, *A*, must be given ending (each row) with the right-hand side (RHS) constant ('return' at end of line). So, e.g., - $x_1 + 4\,x_2 = 78$ would become - 1 4 … 78 . The program finds the **number of constraints**.

This Problem follows the manual resolution by the matrix method (revised simplex). For a "commercial" resolution: NAG version.

'Delta' is: *(a)* [V. Tavares, 1996] the *reduced cost* (rc) vector; *(b)* [WinQSB, 1996] the *rc* vector for the structural basic variables, and *minus* the *shadow prices* for the constraints, according to the slack variables. ('Lindo' [2002] gives symmetrical *rc*.)

Reset

References:

- Tavares, L. Valadares, Rui Carvalho Oliveira, Isabel Hall Themido, F. Nunes Correia, 1996, "Investigação Operacional" (Operational Research), McGraw-Hill, Amadora (Portugal).
- WinQSB ? (see instructions !) by Yih-Long Chang in Lawrence, Jr., John A. and Barry A. Pasternack, 2.nd ed., 2002, "Applied Management Science: modeling, spreadsheet analysis, and communication for decision making", John Wiley, New York, NY (USA).
- Lindo ?, Lindo Systems, Inc., Chicago, IL (USA).
- Wagner, Harvey M., 1972+, "Principles of Operations Research, with applications to managerial decisions", John Wiley, New York, NY (USA).