

A larger 2000x1000 general LP (lp2000)

Problem: This problem is the general LP (linear program) with 2000 variables and 1000 linear constraints. The general formulation in vector form is as follows.

$$\begin{aligned} \max \quad & \mathbf{c}' \cdot \mathbf{x} \\ \text{subject to} \quad & \mathbf{A} \cdot \mathbf{x} \leq \mathbf{b} \\ & \mathbf{x} \geq 0 \end{aligned}$$

An explicit formulation can be given as follows:

$$\begin{aligned} \max \quad & \sum_{j \in J} c_j x_j \\ \text{subject to} \quad & \sum_{j \in J} a_{i,j} x_j \leq b_i && \text{for all } i \in I \\ & x_j \geq 0 && \text{for all } j \in J \\ & J = \{1, \dots, m\}, \quad I = \{1, \dots, n\} && m, n \geq 0 \end{aligned}$$

Model this problem as an LPL model. The data for the model are generated randomly and the fill-factor of the matrix \mathbf{A} is about 2%.

References

- [1] MatMod. Homepage for Learning Mathematical Modeling : <https://matmod.ch>.