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Tutorials

Optimisation

2018

Exercise Sheet 3

Exercise 5 and 6 are for the tutorial session.

Exercise 5:

Consider the example discussed in the lectures (slides $61 - 66$-1).

`http://cgi.csc.liv.ac.uk/~gairing/COMP557/board/20181011.pdf`

(a) Compute B^{-1} of basis 2 and give the associated basic solution.

(b) Do the same for basis 3 (we started this in the lecture).

(c) Find more bases of A and determine the corresponding basic solutions.

(d) Which of them are feasible?

Exercise 6:

Consider the following linear program:

$$
\begin{array}{rrrrrrrrl}
\min & -x_1 & + & x_2 & - & x_3 & - & 2x_4 & \\
s.t. & x_1 & + & x_2 & + & 2x_3 & + & x_4 & = 8 \\
& & & x_2 & + & 6x_3 & & & = 12 \\
& x_1 & & & & & & & = 4 \\
& & & x_2 & & & + & x_5 & = 6 \\
& & & & & & & x_j & \geq 0, \quad \forall j
\end{array}
$$

(a) Determine A, b such that the constraints of the above LP can be written as

$$Ax = b, x \geq 0.$$

(b) Determine all bases B of A. Compute B^{-1} for each basis B. Give the corresponding basic solution.

(c) Which are feasible?