TD 6

Exercise 1:

Solve the following (ILP) problem using B&B and the Simplex:

$$(ILP)\begin{cases}\max z(x) = x_1 + 4x_2 \\ w.r. \left| \begin{array}{l} (S)\begin{cases}5x_1 + 8x_2 \leq 40 \\ -2x_1 + 3x_2 \leq 9\end{cases} \\ x_i \geq 0 \ \text{(p.c.)}, x_i \in \mathbb{Z}\end{array}\right.\end{cases}$$

Exercise 2: 0/1 Knapsack Problem

- the volume of the bag is 15 (lt).
- there are five objects

Object	Value	Volume
1	5	5
2	3	4
3	6	7
4	6	6
5	2	2

The problem can be formalized as follows:

$$(ILP)\begin{cases}\max z(x) = 5x_1 + 3x_2 + 6x_3 + 6x_4 + 2x_5 \\ w.r. \left| \begin{array}{l} (S)\{5x_1 + 4x_2 + 7x_3 + 6x_4 + 2x_5 \leq 15 \\ x_i \in \{0,1\}\end{array}\right.\end{cases}$$