

Two wheels

Difficulty level: intermediate

Keywords

- Production
- Linear Programming
- Excel Solver
- Python+PuLP

Problem description

The *Passion for Two Wheels* company, based in Catania, builds three products: bicycles, motor bicycles, and tricycles for children. For a given production period, for each product unit the following data are available and shown in Table ??: the profit (in €), the production cost (in €), and the space occupied in the warehouse (storage, in m^3).

	Bicycles	Motor bicycles	Tricycles
Profit (€)	100	300	50
Production cost (€)	300	1200	120
Storage (m^3)	0.5	1	0.5

Table 1: Information available for each product unit.

The company has a maximum capital of 93,000 €, and an available storage of 101 m^3 . How many units of each product should it produce, in order to maximize the total profit?

Tasks

1. Formulate the problem by applying Linear, Integer, or Mixed Integer Linear Programming.
2. Solve the problem by using Excel Solver.
3. Implement the mathematical model in Python and solve it by exploiting the PuLP library.