

Unveiling the Power of Linear Programming: A Comprehensive Guide for Economists and Decision Makers

Linear programming (LP) is a powerful mathematical technique used to solve a wide range of optimization problems. It is a fundamental tool in economics and decision science, and is used in a variety of applications, including resource allocation, production planning, and financial planning.

In this article, we will provide a comprehensive overview of linear programming, covering its basic concepts, formulations, and applications. We will also discuss some of the advanced techniques that can be used to solve more complex LP problems.

Linear programming is a type of optimization problem that seeks to maximize or minimize a linear objective function, subject to a set of linear constraints. The objective function is a linear combination of the decision variables, and the constraints are linear equations or inequalities.



Mechanism Design: A Linear Programming Approach (Econometric Society Monographs Book 47)

by Rakesh V. Vohra

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The general form of a linear programming problem is as follows:

$$\begin{aligned} &\text{maximize (or minimize) } z = c_1x_1 + c_2x_2 + \dots + c_nx_n \text{ subject to } a_{11}x_1 + a_{12}x_2 + \\ &\dots + a_{1n}x_n \leq b_1 \quad a_{21}x_1 + a_{22}x_2 + \dots + a_{2n}x_n \leq b_2 \quad \dots \quad a_{m1}x_1 + a_{m2}x_2 + \dots + a_{mn}x_n \leq \\ &b_m \quad x_1 \geq 0, x_2 \geq 0, \dots, x_n \geq 0 \end{aligned}$$

where: * z is the objective function * x₁;, x₂;, ..., x_n;



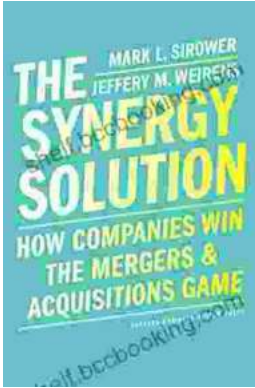
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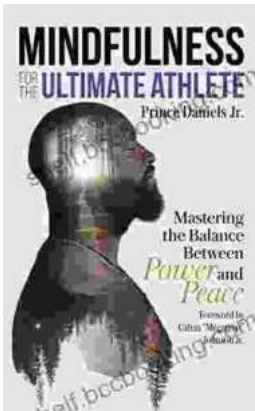
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