

Simplex Method

Lec -5 Simplex Method || General form to Standard form || In Hindi || Easy steps to convert

General Form into Standard Form

i) Check whether the objective function of LPP is maximized or minimized. If it is to be minimized, then we convert it into a problem of maximization by

$$\text{Max } Z' = -\text{Min } Z \quad \text{positives}$$

ii) Check all the decision variables are ≥ 0

Please like share and subscribe my channel

Exit full screen (f)

Lec -5 Simplex Method || General form to Standard form || In Hindi || Easy steps to convert

iii) Check all the decision variables are ≥ 0 .
if any d.v are unrestricted.

$$2x_1 + x_2 \leq 4 \quad x_1 \geq 0 \text{ & } x_2 \text{ is unrestricted.}$$

$$2x_1 + (x_2' - x_2'') \leq 4 \quad x_1, x_2', x_2'' \geq 0.$$

iv) Express the problem in standard form by introducing slack or surplus variable to convert the inequality constraints into equation.

4:38 / 10:31

Lec -5 Simplex Method || General form to Standard form || In Hindi || Easy steps to convert $x_1, x_2' \geq 0$.

III) Express the problem in standard form by introducing slack or surplus variable to convert the inequality constraints into equations.

\leq add slack variable
 \geq subtract surplus variable.

IV) Check whether all the b_i ($i=1, 2, \dots, n$) are positive or not. If any b_i is -ve then multiply the inequation of constraints by -1.

9:08 / 10:31

Lec-6 Simplex Method Maximization Problem In Hindi || Solve an example || Operation Research

Constraints into equation.

- 1) All the values of right hand side must be positive.
- 2) Write the values of initial basic feasible solution.
- 3) Write the standard form LPP into matrix form.
- 4) Construct the initial simplex table.
- 5) Calculate the values of $Z_j - C_j$ and check the basic feasible solution for optimality.

$$Z_j - C_j = C_B X_j - C_j$$

If all $(Z_j - C_j) \geq 0$, the optimal solution will be obtained.

If atleast one $(Z_j - C_j)$ is -ve then indicate by an arrow and this column is called key column.

If $(Z_j - C_j)$ is -ve then choose them and this column is

8:12 / 38:27

Lec-6 Simplex Method Maximization Problem In Hindi || Solve an example || Operation Research
Press Esc to exit full screen

- i) If all $(z_j - c_j) \geq 0$, solution will obtained.
- ii) If atleast one $(z_j - c_j)$ is -ve then indicate by an arrow and this column is called key column.
- iii) If more than one $(z_j - c_j)$ is -ve then choose the most negative of them and this column is called key column.

⑤ Calculate minimum ratio.

$$\text{min. ratio} = \frac{x_B}{c_k}, c_k = \text{key column}, > 0$$

⑥ Construct the new simplex table by entering incoming vector.

⑦ Repeat step 5, 6.

14:57 / 38:27

Lec-6 Simplex Method Maximization Problem In Hindi || Solve an example || Operation Research

$$\begin{array}{rccccccccc} z_j - c_j & 4 & 0 & 0 & 1 & 4 & 0 & 0 & 0 & 1 \\ R_3 & 420 & & & 1 & 4 & 0 & 0 & 0 & 1 \\ R'_3 & R_3 - 4R_1 & \underline{\underline{4R_1}} & 400 & -1 & 4 & 0 & 2 & -1 & 0 \\ & & & 20 & 2 & 0 & 0 & -2 & 1 & 1 \end{array}$$

Since all $z_j - c_j \geq 0$, the solution is optimum and given by $x_2 = 100, x_3 = 230, x_4 = 0$.

$$\begin{aligned} \text{Max } Z &= C_B X_B \\ &= (2 \times 100 + 5 \times 230) \\ &= 1850. \end{aligned}$$

37:29 / 38:27

نوعیه ۱۹ ۳:۳۰ پ.ش

Activities Google Chrome ▾

Lec-6 Simplex Method M... But what is a convolution... Simplex Method - Google Internet Speed Test | Fast! www.imse.iastate.edu Simplex Method for Solu...

← → ⌂ ⌂ engineeringnotes.com/linear-programming/simplex-method-for-solution-of-l-p-p-with-examples-operation-research/15373

Social FYP React webs others more Gmail TOC/NLP-Go... operation res... The Official Sh...

Update

Introduction to the Simplex Method:

Simplex method also called simplex technique or simplex algorithm was developed by G.B. Dantzig, An American mathematician. **Simplex method is suitable for solving linear programming problems with a large number of variable.** The method through an iterative process progressively approaches and ultimately reaches to the maximum or minimum values of the objective function.

Principle of Simplex Method:

ADVERTISEMENTS:

It has not been possible to obtain the graphical solution to the LP problem of more than two variables. For these reasons mathematical iterative procedure known as 'Simplex Method' was developed. The simplex method is applicable to any problem that can be formulated in-terms of linear objective function subject to a set of linear constraints.

The simplex method provides an algorithm which is based on the fundamental theorem of linear programming. This states that "**the optimal solution to a linear programming problem if it exists, always occurs at one of the corner points of the feasible solution space.**"

The simplex method provides a systematic algorithm which consist of moving from one basic feasible solution to another in a prescribed manner such that the value of the objective function is improved. The procedure of jumping from vertex to the vertex is repeated. The simplex algorithm is an iterative procedure for solving LP problems.

It consists of:

ADVERTISEMENTS:

Design of Gating System | Casting | Manufacturing Science

Forming Process: Forming Operations of Materials | Manufacturing Science

Generative Manufacturing Process and its Types | Manufacturing Science



More People Switching to VoIP Phones (Take a Look a...
VoIP Phone | Search Ads | Sponsored

Read Next Story >