LIMITATIONS IN LINEAR PROGRAMMING PROBLEMS

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***Abstract*—In this paper a new methodology is proposed to identify the joblessrestrictions in linear programming problems and linked with the prevailing three techniques and analyzing the computational efforts by solving various size of linear programming problems.**

***Keywords*—Linear programming,**

I.INTRODUCTION

In solving an LPP, we tend to contain all conceivablerestrictions that will increase the number of recapitulations and computational effort. It is well known that for most of the large scale LP problems, slightly small part of restrictions are intricate in the realistic region. The aim of this work is to compare the new approach with the earlier method by using some of the restrictions.

II.PROPOSED TECHNIQUE

In this section, a new tactic is advised to select the most preventive constraint. The steps of the proposed method are as follows.[5-10]

Step 1:

Divide the left hand side value by each of the reserverestrictions along the relevant

co- ordinate axis.

Step 2:

Compute $S_i = \sum_{j=1}^{n} \lceil \overline{a_{ij}} \rceil$

Step 3:

Select a highest limiting restriction equivalent to l. Where $l = \arg \text{minimum}_i(S_i)$,

Step 4:

If $A_l X \le b_k$, is the unnecessary if $\alpha^l_k \le b_k$ Where α^l_k is the optimal value of LP^l_k, where LP^l_k is

LP^l_k: Maximize $\alpha^l_k = A_l X$

Subject to $A_l X \le b_l$

$0 \le X \le U$

III.NUMERICAL ILLUSTRATION

Example:

Maximize $z = x_1 + x_2$

Sub to

$x_1 + x_2 \le 3$ --------------- 1

$x_1 + 2x_2 \le 5$ ------------ 2

$3x_1 + x_2 \le 6$ ---------- 3

Solution:

Here $C = (1 \;\; 1)$

$$A = \begin{pmatrix} 1 & 1 \\ 1 & 2 \\ 3 & 1 \end{pmatrix}$$

$$b^T = (3 \;\; 5 \;\; 6)$$

$$U^T = (25 \quad 20)$$

$S_1 = 75$

$S_2 = 70$

$S_3 = 75$

Maximize $\alpha_k^l = A_l X$

Subject to $A_l X \le b_l$, where $l = \arg\min_i(S_i)$,

$$l = 2$$

$$0 \le X \le U$$

(i) $\alpha_1^2 = (1 \quad 1)$

$(1 \quad 2)\binom{x_1}{x_2} \le 100$

$\alpha_1^2 = 300$, constraint 1 is not the unnecessary constraint.[11-15]

(ii) $\alpha_3^2 = (3 \quad 1)$

$(1 \quad 2)\binom{x_1}{x_2} \le 100$

$\alpha_3^2 = 300$, constraint 3 is the unnecessary constraint.[16-23]

Therefore constraint 3 is the unnecessary constraint.

IV. CONCLUSION

In this paper, earlier technique has been compared with mentioned procedure. This new procedure is less time consuming as associated with the previous method. This newapproach requires small number of computational steps. Both methods were identified same dismissedlimitations. Therefore, it is easy to identifythe unnecessary constraints even in a large scale linear programming problems. And also can compute the time in milliseconds and micro seconds. Earlier approach taken more work and more time.

Comparative results of the both methods:

S.No.	No. of Constraints	No. of variable	Earlier Method	Proposed Method
1	3	2	1(3)	1(3)
2	3	2	0	-
3	3	2	1(3)	1(3)
4	4	3	2(3,4)	2(3,4)
5	4	3	2(1,4)	2(1,4)
6	3	3	1(3)	1(3)
7	4	5	2(3,4)	2(3,4)
8	5	2	4(2,3,4,5)	4(2,3,4,5)
9	5	4	2(2,4)	2(2,4)

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