Contents

CS508: Simplex Implementation

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M.Tech CSE

1 Introduction

Simplex is a technique to solve linear programs. There are several methods to solve linear programs. One of the famous methods is Two Phase method which is extensively used in computer programs.

2 Steps to solve linear program

1. Bring the constraints into equality form by adding slack variables and artificial variables.
   (a) If constraint is of type $\geq$, subtract the surplus variable and add artificial variable.
   (b) If constraint is of type $\leq$, add both surplus variable and artificial variable.
   (c) If constraint is of type $=$, add only artifical variable.
2. First phase minimizes the sum of the artificial variables.
3. If any artificial variable has a positive value in the optimal solution, he original linear program is infeasible.
4. Second phase solves the linear program starting from the solution found in first phase.

3 Steps to run the code

- Open terminal or command prompt and give the command **python run.py**
- Enter the file name. Extension name should be lpt and the input format should be given as per requirement.
- It will print the objective value and the solution.

4 Plot results