TOPIC : COLUMN DROPPING RULE

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The given code is a Python implementation of the Simplex algorithm, which is used for solving linear programming problems. It takes user inputs for the objective functions, constraints, and their conditions (maximization or minimization). The code then converts the input into matrices and performs iterations using the Simplex algorithm to find the optimal solution. The output is the optimal values of the decision variables and the maximum or minimum value of the objective function.

The code you provided is for solving linear programming problems using the simplex method. Here is a brief explanation of the code:

1. The code begins by taking inputs from the user. The inputs include the number of objective functions, the priority of each objective function, the type of each objective function (maximization or minimization), the objective functions themselves, the number of constraints, the constraints themselves, and the values of the right-hand side of each constraint.
2. The code then converts the objective functions and constraints from their string format to a list of numbers using the equation\_token function.
3. The objective functions are then converted to a list of negative numbers to allow the code to maximize them. The number of variables is also calculated at this point.
4. The constraints are converted to a matrix format by adding a column of zeros for each variable. This is to allow the matrix to be multiplied by the decision variables in the simplex method.
5. A diagonal matrix is created based on the type of each constraint (less than or equal to or greater than or equal to). This is done to ensure that the slack and surplus variables have the correct signs.
6. The constraint matrix is then modified by appending the diagonal matrix to the right of the matrix.
7. The simplex method is implemented using the irration and min\_max functions. The irration function finds the pivot element for each iteration of the simplex method, and the min\_max function implements the simplex method itself.
8. The min\_max function first checks whether the problem is a maximization or minimization problem. If it is a maximization problem, the function iteratively applies the simplex method until the optimal solution is found. If it is a minimization problem, the function first converts the problem to a maximization problem and then applies the simplex method.
9. Finally, the optimal solution is displayed to the user.

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