CSC373 Worksheet 6 Solution

August 12, 2020

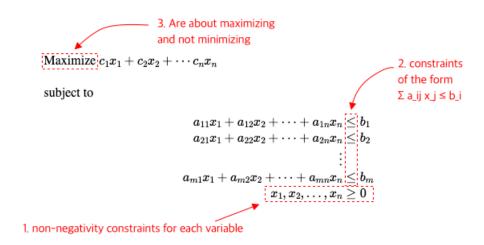
1. Notes:

• Linear Programming

- Is a method to achieve the best outcome (such as maximum profit or lowest cost) in a mathematical model whose requirements are represented by linear relationships. [1]
- Is named to make it sound cool for government funding
 - * Like dynamic programming
- Applications
 - * Microeconomics (maximize profits, minimize costs)
 - * Company management

• Standard Form

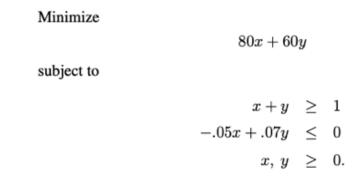
- Is a form of linear programming
- Are about maximizing, not minimizing ^[2]
- All have a positivity constraint for each variable [2]
- All other constraints are all of the form "linear combination of variables \leq constant". [2]

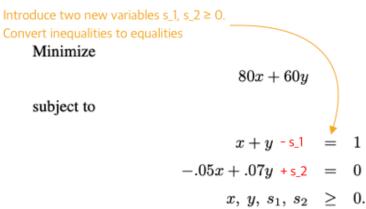


• Converting Linear Programming to Standard Form

- 1) Mutliply inequality by -1 to get non-negative RHS [3]
- 2) Convert inequalities to equalities by adding or subtracting non-negative slack variables $^{[3]}$
- 3) Resolve unrestrictive variables by writing the variable as the difference of two new non-negative variables [3]

Example:





References:

- 1) Wikipedia, Linear Programming, link
- 2) Instituto de Mathematicas, Standard form for Linear Programs, link