Project Proposal

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1   Project Description

Python LP Solver: This project will focus on building an LP solver in `python` from scratch. The project will use `numpy` as the linear algebra package behind the solver, but everything else will be implemented from scratch.

2   Methodology

For me to complete this project, I think this is the best way to approach the problem.

1. First, create a `simplex_phase_2` method which will take a feasible initial x_0 as well as A, b and return the optimal solution to the problem x^*. Some different variations on the entering variable algorithm are listed below. I will also investigate how these algorithms perform on different problem sizes.

   - Steepest descent - picking the value with the greatest negative value to enter the basis.
   - First negative - picking the variable with the first negative value as the entering variable.
   - Secretary's rule - I want to try using the Secretary's rule, where you do the first $\frac{1}{e}$ proportion of variables, and pick the one with first value greater than that.