Math 3400 Project
Fall 2022
Grading Rubric

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Marks

The project is graded out of 20. You have already received a mark out of 2 for the draft description. The final 18 marks are awards as follow.

Outcome	Max grade	Your mark
Problem Description The problem is clearly defined and the decision to modify an existing problem to reflect the world (sad) current events shows some creativity. At some point (independent from the LP equations) you should indicate the profit per item.	3	2.5
LP Formulation This is clear, although as mentioned above you should have a table with the profits	3	3
Software Solution Clearly done excel sheet. Some exploring more than purchasing fertilizer could be done. What if you put an minimum or maximum of each type of fruit?	3	2.5
Analysis This was straightforward but well done. I was confused about the claim of a 23% return on page 1. A profit of 609 from a 800 investment? There is a little room here to do a deeper dive on different constraints especially bounding above and below.	6	5
Summary and recommendations You did a good job here. The summary and plans based on prices of resources is very good.	3	3 16

Expected Structure

- At this point I should have received a project description from each person. The project you solve can be updated from your initial proposal, but avoid radical changes. Make sure you choice of problems comfortably fits into the LP structures we have studied so far.

- For the report there should be a summary at the beginning describing the problem, the found solution, and the recommendation for improving the optimum value based on the shadow prices. (This is likely to be one page.)

- Following the summary give a more detailed description of the problem set-up, i.e., it's full formulation. Give the values of the decision variables at the optimum. Also give the value of the dual variables and confirm optimality using results from class (Weak Duality or Complementary Slackness are useful here.)

- In the next section give a full description of the interpretation of the dual variables and a sensitivity analysis for the results (the b vector). From this provide a detailed description of changes that can be made to the resource vector, and under what conditions you would make those changes.

- In some problems it makes sense to only have integer valued variables. Discuss whether that is or is not the case for you problem. In the event that it is, solve the integer version of the problem.

- You may choose to put some more detailed information in an appendix if you think that will improve the readability of your report.

- Finally, if you use materials from other books or the web, make sure to acknowledge this either in the writing itself, or using citations to references. (Your call on this. The key is to be honest in acknowledging resources used.)