Project

Objective

The goal of this project is for you to

- create an original homework problem that asks students to model a problem in midshipman life as a linear program and solve it using MathProg, and

- prepare accompanying solutions to your homework problem.

For example, you might create a problem about finding an optimal diet according to some metric of your choosing, based on the food served in King Hall. Creative and realistic projects will be rewarded!

Project milestones:

1. **Preliminary problem statement**, due March 8
2. **Final problem statement and solutions**, due April 29

You must work in teams of 2 (one team may have 3). Detailed requirements for each of these milestones are given below.

1 Preliminary problem statement

Task. Problem statement, typed.

Purpose. To give you feedback on your preliminary ideas.

Format. Your problem statement should resemble an LP modeling problem. In particular, your problem should give some background information, indicate in words what decisions are to be made, how these decisions are constrained, and what objective should be used to guide these decisions. For example, take a look at the problems in Lessons 4–15, the homework problems from Chapter 2 in Rader, and the diet problem. In addition, you should indicate how you will get actual data for the problem, and the anticipated size of your data (e.g. for the diet problem, how many food items, nutrients, etc.).

2 Problem statement and solutions

Task. (i) Problem statement and solutions, typed, and (ii) MathProg code.

Purpose. To have an LP modeling problem about midshipman life and accompanying solutions ready for distribution to students in next year's SA305 class.

Format. In addition to your finalized problem statement, which should follow the guidelines above, you should prepare solutions to your problem. Your solutions should contain a linear program that correctly models your problem, with definitions of all symbolic input parameters and decision variables, and brief explanations of the objective and constraints. You should also prepare MathProg model and data files. Both files should be commented so that their contents are easily decipherable. Use the files for the diet problem as a style guide. One team member should upload the MathProg code to a new folder in his or her submission folder on Google Drive.