

Problem 1

Consider the following cost table:

	Task 1	Task 2	Task 3	Task 4
Assignee A	4	1	0	1
Assignee B	1	3	4	0
Assignee C	3	2	1	3
Assignee D	2	2	3	0

Solve, manually, via Hungarian Method.

Source: Hillier & Lieberman 8.4.5

Problem 2

Four cargo ships will be used for shipping goods from one port to four other ports (labeled 1, 2, 3, 4). Any ship can be used for making any one (and only one) of these four trips. However, because of differences in the ships and cargoes, the total cost of loading, transporting, and unloading the goods for the different ship-port combinations varies considerably, as shown in the following table:

	Port 1	Port 2	Port 3	Port 4
Ship 1	500	400	600	700
Ship 2	600	600	700	500
Ship 3	700	500	700	600
Ship 4	500	400	600	600

Minimize the total cost to ship the goods. Solve, manually, via Hungarian Method.

Source: Hillier & Lieberman 8.4.1

Problem 3

Getting ready for Thanksgiving and actually crafting a great Thanksgiving meal is quite an operation around the Jamieson household. Typically, it involves up to five days of preparation of cooking which is carefully mapped and scheduled to minimize stress and to allow for flexibility if something goes terribly, terribly wrong. Now, lets say that Alan isn't quite so OCD as he really is, and he forgets to schedule things. Given two ovens (independent thermostats), 10 hours (from 8am to 6pm), and the following items that need to be cooked in the oven (complete with how much space in the oven the item needs), schedule our Turkey Day meal prep. Do not worry about making sure that things are warm for the actual meal - we have a makeshift food warmer created out of an arduino, temperature sensor, heating elements, and a chest cooler.

1. Turkey, whole oven, 6 hours, 325 degrees
2. Cornbread leek dressing, quarter oven, 1 hour, 350 degrees
3. Hashbrown casserole, half oven, 1 hour, 350 degrees
4. Honey wheat bread, half oven, 1.5 hours, 375 degrees
5. Apple pies, half oven, 1 hour, 350 degrees
6. Pecan pies, half oven, 45 minutes, 350 degrees
7. Green bean casserole, quarter oven, 1 hour, 400 degrees
8. Pumpkin souffle, whole oven, 1 hour, 350 degrees
9. Creamed corn with bacon, half oven, 45 minutes, 375 degrees
10. Rolls, 30 minutes, 350 degrees
11. Oyster dressing, quarter oven, 45 minutes, 375 degrees
12. Chocolate chip cookies, quarter oven, 1 hour, 350 degrees
13. Roasted little cabbages with bacon, half oven, 45 minutes, 375 degrees
14. Roasted carrots and parsnips with maple dressing, half oven, 45 minutes, 400 degrees

Source: IT'S ALMOST TURKEY DAY!