Discrete Optimization Journal

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1 Week 1

1. Syllabus is posted on the web site.
2. Assignment 1 is posted.
3. Week 1 contains the material covered in the first week (three lectures).
4. The folder Chinn and Flick contains the assignment problem demos.
5. Down load the folder APNew
6. To run it you must have JDK (Java Development Ki)t installed in your computer. You can down load java at www.java.com/en/.
7. Click on Run
8. Click on O.K. let's go (bottom button)
9. Click on Browse
10. Select either ASSIGN or Data Set (both are data files).
11. Click on Load. You should see a 20 x 20 assignment instance.
12. Click on Start
13. Solve displays the final solution with no details.
14. Next Step Executes a single step at a time, like reducing the entries in a single row.
15. Next Stage Executes a set of related steps, like reducing all rows or all columns or finding independent zeros.
16. Once all zeros are displayed they will have three colors:
17. - Green the current set of independent choices (no two are on the same row or column).

- Red: a zero in a row where there is no Green zero.
- Brown a zero in a row where there is a green zero.

18. Run it a stage at a time until you understand what each step does.
19. You missed a wonderful party if you did not attend the party last saturday. Look at the pictures in the folder pictures.
20. Tuesday 27 Sep. We shall start with a brief discussion of isomorphism then move to spanning trees,BFS, DFS, minimum cost spanning trees and shortest path algorithms.

Challenge
When the program selects the columns and then selects the rows a"miracle" happens:

The number of lines selected (rows + columns) is equal to the number of green zeros! Can you prove that this will always be the case?