

Discrete Optimization

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Name:

1 Drill

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To make this class more efficient create a TSP instance of size 14. Find in it a MCST and bring it to class.

Also for practice purposes, create a weighted graph of size 14 with density 3 and bring it to class.

i. Five men and five women are to be matched in a stable match. Their preferences are:

$$\begin{array}{ll} w_1 \rightarrow (1, 5, 3, 4, 2) & m_1 \rightarrow (3, 1, 5, 4, 2) \\ w_2 \rightarrow (4, 1, 3, 5, 2) & m_1 \rightarrow (5, 2, 1, 4, 3) \\ w_3 \rightarrow (1, 5, 3, 2, 4) & m_1 \rightarrow (5, 1, 3, 4, 2) \\ w_4 \rightarrow (2, 5, 1, 3, 4) & m_1 \rightarrow (5, 1, 3, 4, 2) \\ w_5 \rightarrow (1, 5, 3, 2, 4) & m_1 \rightarrow (5, 3, 1, 4, 2) \end{array}$$

1. Produce a random schedule. Is it stable?

2. Find a stable schedule using the Gale-Shapley algorithm. How many "rounds" did you use to find it?

ii. Find a schedule for the ships problem (see the supplements folder for the data).