

Discrete Optimization

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1 MCST and shortest path

Lecture-7 preparation.

The adjacency matrix of a weighted graph of order 12 is:

```
0: 0 80 0 0 0 0 0 70 0 47 78 95
1: 80 0 28 69 96 22 31 0 78 52 0 0
2: 0 28 0 46 58 0 0 0 57 0 0 91
3: 0 69 46 0 0 0 0 0 0 33 0 0
4: 0 96 58 0 0 0 11 12 0 69 0 0
5: 0 22 0 0 0 0 0 0 22 0 79
6: 0 31 0 0 11 0 0 0 0 98 0 0
7: 70 0 0 0 12 0 0 0 0 31 0 0
8: 0 78 57 0 0 0 0 0 0 0 0 51
9: 47 52 0 33 69 22 98 31 0 0 68 79
10: 78 0 0 0 0 0 0 0 0 68 0 0
11: 95 0 91 0 0 79 0 0 51 79 0 0
```

A 0 means that there is no edge between the corresponding vertices.

1. Find a spanning tree and calculate its cost.
2. Find the cheapest path from 0 \rightarrow 8.