Graphs

Hamiltonian

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By the end of this video you will be able to…

- Define a Hamiltonian cycle in a graph.
- Determine, for small exampes, whether a graph is Hamiltonian.
- Describe an algorithm deciding whether a graph is Hamiltonian.
- Discuss the efficiency of this algorithm.

In TSP, given n cities with one Hometown and all pairwise distances, plan a tour starting and ending at Hometown that visits every city exactly once and has minimum distance.

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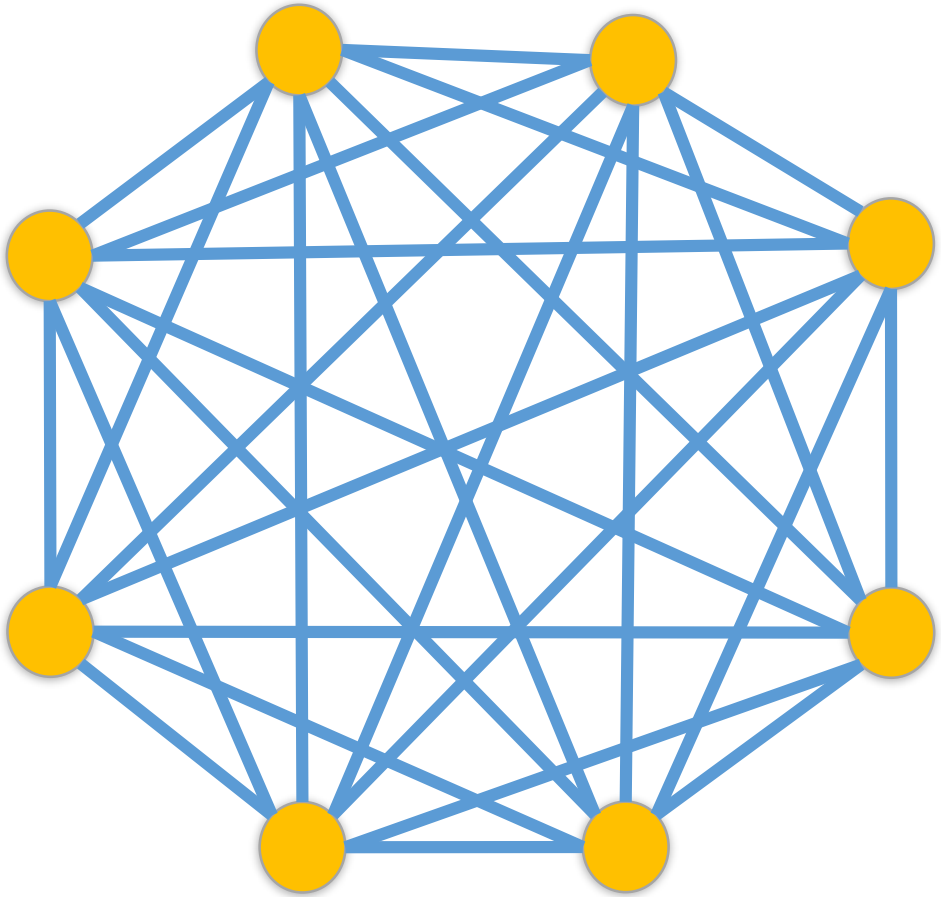
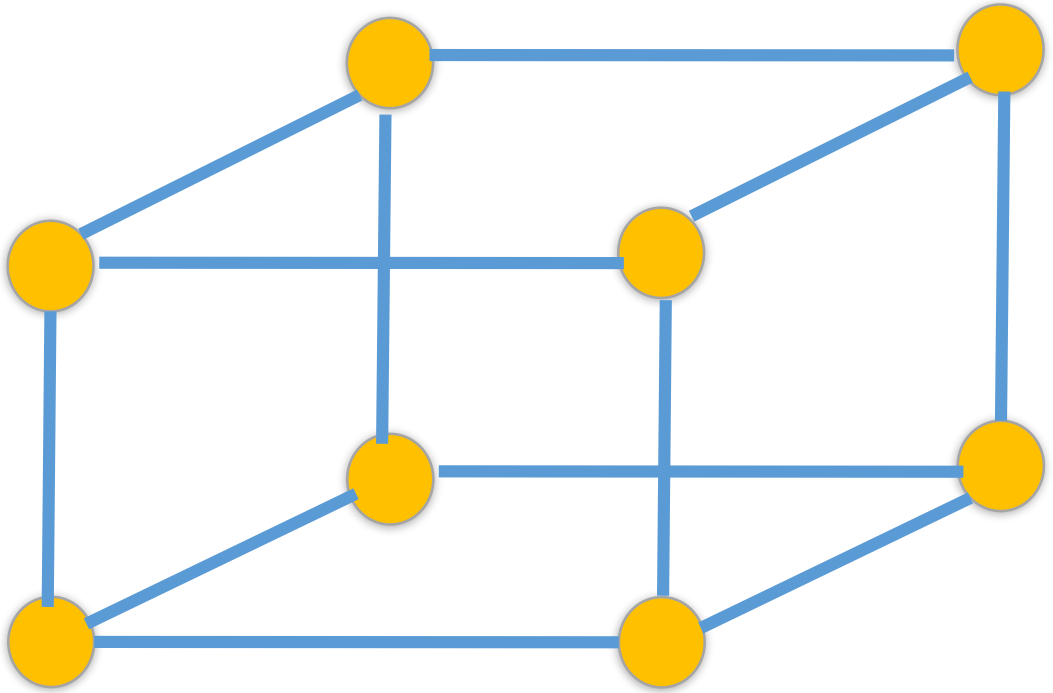
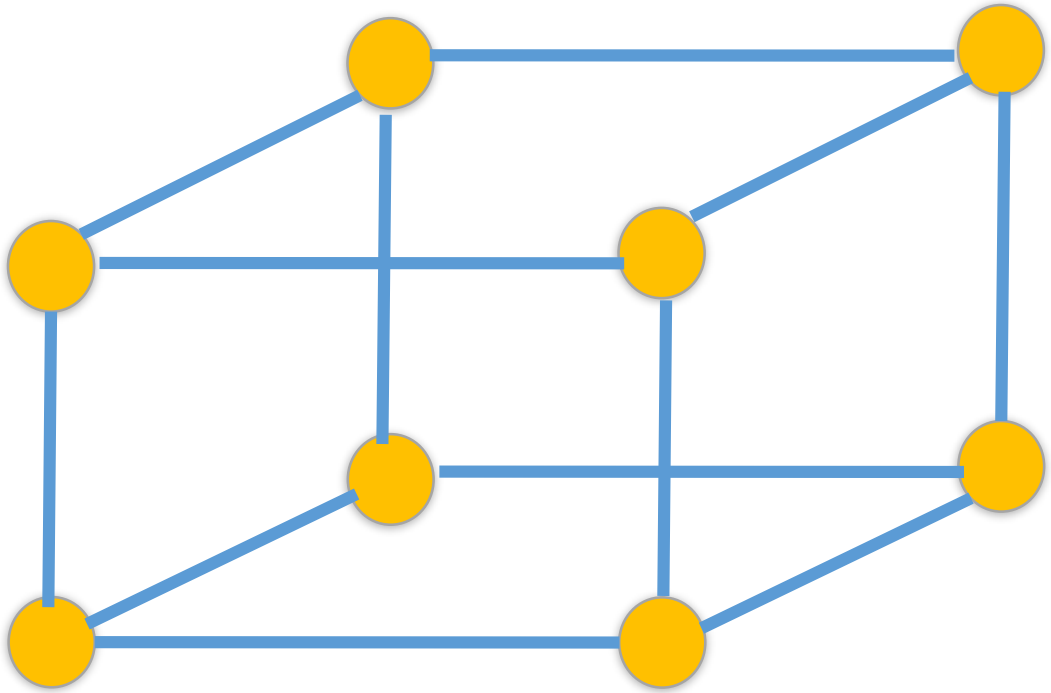
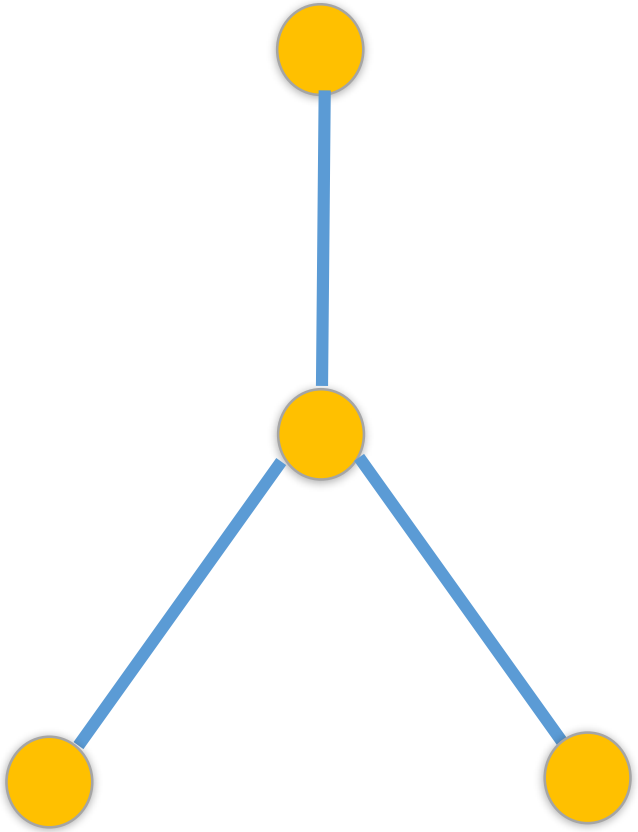
Is this doable? What if some edges are missing?

A graph is Hamiltonian if there is a path through the graph which visits each vertex exactly once.









How to test?

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Brute force: generate all sequences of vertices

- are they paths?
- are they Hamiltonian?

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Efficient

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Too many!

Brute force: generate all sequences of vertices

- are they paths?
- are they Hamiltonian?

NP - Complete

What's next?

- Are all graph problems this hard?