Summary: Lecture 8

Summary for the chapters *9.3* and *9.4*. [2, 1]

Title
Content

IndependentSet

IndependentSet
INDEPENDENTSET Input: An undirected Graph G and a number k. Question: Is there a set of k nodes with no edges in between? (INDEPENDENTSET)

INDEPENDENTSET is NP-complete.

Proof idea:

- triangle construction

TODO
Questions:

HamiltonPath is NP-complete

HAMILTONPATH is NP-complete.

Proof idea:

- Another reduction from 3SAT

TODO
Questions:

TSP(D)

TSP(D)
TSP(D) is a decision version of TSP. Input: A $n \times n$ distance matrix and a bound $B \in \mathbb{N}$ Question: Is there a round tour of length $\leq B$ that visits all *cities*?

TSP(D) is NP-complete.

Proof idea:

- budget of nodes is $B = |V| + 1$

TODO
Questions:

Knapsack

Knapsack

TODO

Questions:

References

[1] Martin Berglund. *Lecture notes in Computational Complexity.*

[2] Christos H. Papadimitriou. *Computational Complexity.* Addison-Wesley Publishing Company, 1994.