

# Advanced Problem Solving and Search

## Tutorial 4

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May 18, 2021

For the ASP exercises, either use the browser version of clingo <https://potassco.org/clingo/run/>, or download clingo (*recommended*) from <https://potassco.org/>.

### Exercise 4.1

Given a graph  $G = (V, E)$ , a matching is a set of edges  $M \subseteq E$ , such that every node is the endpoint of exactly one edge. Give an ASP Encoding for the Graph Matching Problem.

### Exercise 4.2

Can you encode the Bridge-Crossing Problem of Exercise 1.2 in ASP?

### Exercise 4.3 (Christmas challenge)

Can you encode the problem discussed in the first lecture in ASP? The description of the problem goes as follows:

- Mr. Smith and his wife invited four other couples for a party.
- When everyone arrived, some of the people in the room shook hands with some of the others.
- Nobody shook hands with their spouse and nobody shook hands with the same person twice.
- After that, Mr. Smith asked everyone how many times they shook someone's hand.
- He received different answers from everybody.
- How many times did Mrs. Smith shake someone's hand?