Problem Solving and Search in AI
Tutorial 3 (on May 20th)

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For the ASP exercises, either use the browser version of clingo `https://potassco.org/clingo/run/`, or download clingo (*recommended*) from `https://potassco.org/`. A short introduction will be given in the tutorial.

Exercise 3.1
For the Maze Problem of Exercise 2.1, apply the Tabu Search Algorithm. How does it perform compared to your A*-Implementation?

Exercise 3.2
Given the programs P_i, determine the stable models of P_i by applying the *Gelfond-Lifschitz-Reduct*.

$$P_1 = \{a \leftarrow not\ b, c. \quad b \leftarrow not\ a. \quad c \leftarrow not\ b.\}$$

$$P_2 = \{a \leftarrow not\ b. \quad b \leftarrow not\ c. \quad c \leftarrow not\ a.\}$$

$$P_1 = \{a \leftarrow a. \quad b \leftarrow c, d. \quad c \leftarrow not\ d. \quad d \leftarrow not\ c, a.\}$$

Exercise 3.3
Give an ASP Encoding for the Graph Matching Problem of Tutorial 1.

Exercise 3.4
Can you also encode the Bridge-Crossing Problem of Exercise 2.2 in ASP? What could be possible limitations?