Problem Solving and Search in AI
Tutorial 3 (on June 2nd)

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Exercise 3.1:
Given the program $P$, determine the stable models of $P$ by applying the Gelfond-Lifschitz-Reduct.

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

$$P_2 = \{ a \leftarrow not b; \\ b \leftarrow not c; \\ c \leftarrow not a \}$$

$$P_3 = \{ a \leftarrow a; \\ b \leftarrow c, d; \\ c \leftarrow not d; \\ d \leftarrow not c, a \}$$

Exercise 3.2:
Model and solve the following problem with ASP.
The Smith family and their three children want to pay a visit but they do not all have the time to do so. Following are few hints who will go and who will not:

- If Mr Smith comes, his wife will come too.
- At least one of their two sons Matt and John will come.
- Either Mrs Smith or Tim will come, but not both.
- Either Tim and John will come, or neither will come.
- If Matt comes, then John and his father will also come.

Implement and test the encodings using one of the ASP solvers, for example clingo (http://potassco.sourceforge.net/index.html) or dlv (http://www.dlvsystem.com).

An online tool for ASP including examples and tutorial notes is available at http://asptut.gibbi.com.

Further tutorials on ASP: