

## *Logical reasoning and programming, lab session VII*

(November 12, 2018)

For the following experiments use `clingo`. An online version of `clingo` is sufficient. Moreover, the below mentioned examples are available there.

For further experiments, it is recommended to install `clingo`. A convenient way of installation is using `conda install -c potassco clingo` from Anaconda or Miniconda. Anyway, be sure that you have at least version 4 which uses the ASP-Core-2 format.

**VII.1** Check the Harry and Sally example.

**VII.2** Check the Flying Birds example and pay special attention to the use of negations. Try to add `bird(joe)`. Does something change if we extend our knowledge by adding `penguin(joe)`?

**VII.3** Check the Traveling Salesperson example. Note that the minimize line is equivalent to

```
:- cycle(X,Y), cost(X,Y,C). [C,X,Y]
```

discussed during the lecture. Does it make any difference if we change `[C,X,Y]` to `[C]`?

**VII.4** Write a general solver for graph coloring and then check it against the Graph Coloring example. Assume that `n` contains the number of available colors and the input is given by predicates `node/1` and `edge/2` describing the names of nodes and edges between them, respectively. Compare this solution with your SAT solution.

**VII.5** Guess how many lines of code you need to solve the n-queens problem and then briefly check the solution.

**VII.6** Check the Blocksworld Planning example. You can find how the incremental solving works and a brief description of the solution in Potassco guide and further inputs in examples.