First-order Logic
Computer exercises

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Outline

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Setup

1. (I suggest to) Boot Linux
2. Download Prover9

   `http://www.cs.unm.edu/~mccune/prover9/download/`
3. Build the binary `bin/prover9` with

   ```
   make all
   ```

   or

   ```
   make all CFLAGS=-Wl,-no-as-needed
   ```
4. Have a look at the help

   ```
   $ ./bin/prover9 --help
   ```

Outline

Simple test

- Write the following lines in a file

```
formulas(assumptions).
    man(x) -> mortal(x).
    man(socrates).
end_of_list.

formulas(goals).
    mortal(socrates).
end_of_list.
```

- Run with

  `./bin/prover9 -f <filename>`

- Prover9 solves the following computational problem:

$$\textit{assumptions} \vdash \textit{goals}$$

Specify only one goal!

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- Formulas are transformed into Skolem conjunctive normal form
- Goals are negated and added to the assumptions
- The search procedure (resolution) looks for a $\square$

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Examples

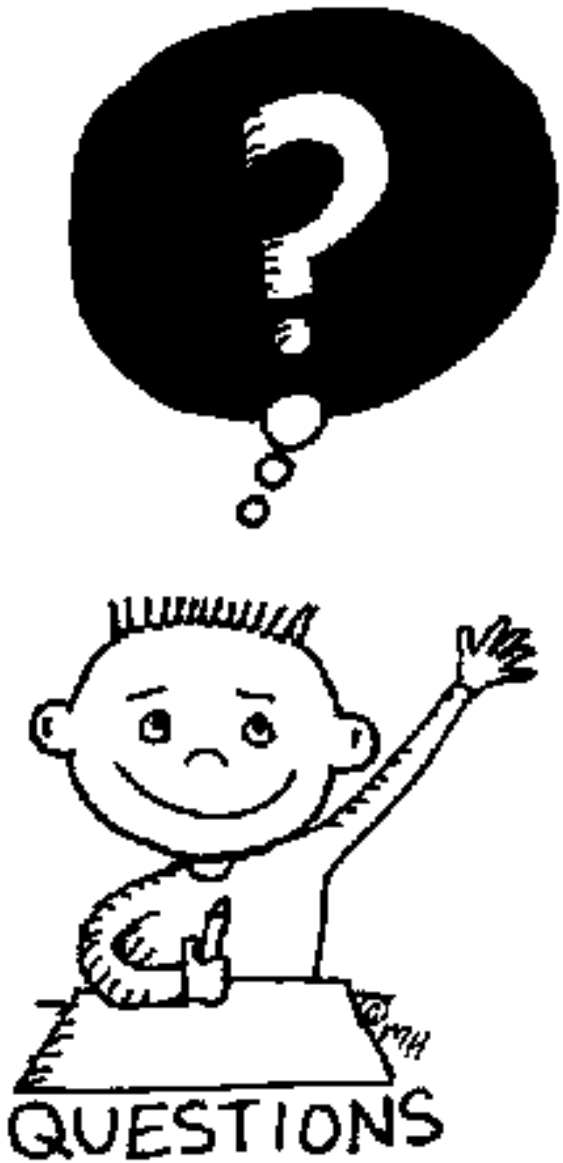
Let's have a look at a few examples available on the web site of the course.

Outline

Exercises

Your turn!

- Practice with a few examples
- Consider previous exercises solved using sequent calculus



END OF THE LECTURE