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HKGAB4 - Lab 3-4 **CogSci Line**

Lab 3-4 : Conjunction, Disjunction, and Negation.

1 Goal

The goal of these labs is to familiarize you with propositional logic. In particular, we focus on

- Extending our atomic language to include the logical connectives conjunction, disjunction and negation. We then evaluate complex sentences.
- Considering the idea of truth-functionality via the use of truth tables and a special evaluation game built into Tarski's World. In addition, we consider the concepts of satisfiability and logical truth.
- Studying several methods of proof, in particular, proof by contradiction and reasoning by case.
- Studying the relation between negation, conjunction, and disjunction.

2 Preparation

The following should be done before the actual lab session:

- Read Chapter 3.1-8.
- Prepare for problems 3.11-3.12 by trying to write the natural language sentences in LFOL.
- Prepare for problems 3.30-3.33 by determining whether you need a proof or not. If not, do the proofs before the labs.

3 Lab Exercises

The following lab exercises are obligatory. Those with a (*) next to them should be saved on your diskettes. For those of you using the IBM PC version of Tarski's World, use the names under the IBM column.

Exercise	SaveAs (Apple)	SaveAs (IBM)
3.1		
3.3		
3.4		
3.5		
3.6 (*)	World 3.6	3-6.wld
3.7 (*)	World 3.7.1	3-7-1.wld
	World 3.7.2	3-7-2.wld
3.8 (*)	Sentences 3.8	3-8.sen
3.11 (*)	Sentences 3.11	3-11.sen
3.12 (*)	Sentences 3.12	3-12.sen
3.13		
3.30 (*)	World 3.30	3-30.wld
3.31 (*)	World 3.31	3-31.wld
3.32 (*)	World 3.32	3-32.wld
3.33 (*)	World 3.33	3-33.wld

For exercise 3.8, in addition to saving the sentence file on the diskette, hand in a printout of the sentence file.

For exercises 3.30-33, either a world file or proof is required. Where a proof is required, hand in the written proof and do <u>not</u> create a world file on the diskette. The grader will check that the proper files are absent. These written proofs should be handed in groupwise.

4 Saving your exercises on diskettes

Be careful to name the files correctly, so that the automatic grader will work properly! In addition, make sure you do not save your solutions in the wrong place, like in the folder with problem files.

5 Deadlines

Each group/student should hand in his or her diskette and written solutions by

- Monday February 22, 1999, at 10am.

We in turn will try to have the graded exercises back to you by

- Wednesday February 24, 1999.

Exercises handed in after this date can <u>at best</u> get a grade of *Godkänd*, providing they are done correctly. Late arrivals will also determine whether additional oral examinations are necessary at the end of the course. The intention with the deadlines is to give you direct feedback, not to make things difficult for you!

6 Grading

You can get *Väl godkänd* (for none or just one or two minor errors), *Godkänd*, or *Kompletteras*. In the latter case, you correct your errors, hand in your diskette again (with <u>all</u> the soulution files of the lab, and not just the ones that have been corrected), and eventually get a *G* as mark on the lab. Your marks on the labs and lecture exercises will decide your final marks: if you get *VG* at all but at most two occassions, you will get a *VG* as final mark. There will also be an opportunity to have an oral exam if you are close to a *VG* and want to improve your mark. To get a *G*, you have to get at least a *G* on all the labs and exercises, and complete the discrete mathematics part.

Good luck!