

<http://www.labri.fr/~sutre/Teaching/B>

1 Brief Overview of the Interactive Prover

On the white board... For in-depth information on the interactive prover, consult the *Prover User Manual* and the *Prover Reference Manual*. Both are available from the course web page.

2 Interactive Proof of Assertions

The previous lab session was devoted to the specification in B of some properties stated in “natural language” mathematical text. Let us stress that these properties are nothing more than formal statements. They may be valid (in the logical sense), or invalid. In fact, two properties in the previous lab session handout are invalid. The objective of this lab session is to prove all properties that are valid, and spot those that are invalid.

Proof obligations can be visualized with the interactive prover. Before starting an interactive proof, analyze the validity of the obligation. You should come up with an intuitive proof, or a counter-example. In the latter case, try to fix the assertion so that it becomes valid (and actually expresses what the specifier meant).

Remark. The solution of the previous lab session is available from the course web page. You may use the proposed solution, or your own.

2.1 Assertions on Natural Numbers

We consider all assertions on natural numbers, i.e., Exercises 1 to 8 of the previous lab session.

Exercise 1 *Interactively prove the unproved obligations of the machine **NatAsserts**. The proof obligation coming from antisymmetry of Exercise 8 is more difficult than the others.*

2.2 Assertions on Sets and Functions

We consider all assertions on sets and functions, except those arising from Exercises 13, 15 and 16.

Exercise 2 *Interactively prove the unproved obligations of the machine **SetAsserts**. The proof obligations coming from Exercises 12 and 18 are more difficult than the others.*