First project for Proof Assistants 2013

The project is to formalize a notion from the course 'Berekenbaarheid' using the Mizar proof assistant. The version of Mizar to be used is 7.12.01, of which the MML has version 4.166.1132.

The choice of the notion is free. For example, one could formalize:

- The definition of a standard Turing machine, of a tape of such a machine, a state of such a machine, and of a computation of such a machine. The final definitions might describe a relation `terminates_with` between two states of a machine.

  If this notion is chosen, then probably structure types should be used.

- The definition of function composition between functions of arbitrary arity. For this notion the Mizar type

  ```
  PartFunc of k-tuples_on NAT,NAT
  ```

  might be useful.

- The definition of the `primrec` operator, which returns a function of arity $k+1$ from a function of arity k and one of arity $k+2$.

- The definition of *computable* numerical function. This probably is much more work than the previous three options, but it might be interesting enough to be submitted to the MML.

  In this case an attribute `computable` should be defined, that applies to partial functions of tuples of natural numbers (of a given length) to natural numbers.

Students can work together if it is clearly indicated which part of the formalization has been written by which student. In that case the project should be larger than if the project is done individually.

The *hard* deadline for this project is **June 23**. As a half-way checkpoint, **April 15** a version of the article has to be handed in in which the statement has been correctly formalized and in which only `*4` and `*1` errors remain.