Funcons-beta: Datatypes

The PLanCompS Project

Funcons-beta/Values/Composite/Datatypes/Datatypes.cbs[*]

Datatypes

> [*Type* datatype-values
> *Funcon* datatype-value
> *Funcon* datatype-value-id
> *Funcon* datatype-value-elements]

A datatype value consists of an identifier and a sequence of values.

'Datatype T ::= ...' declares the type T to refer to a fresh value constructor in types, and asserts $T <:$ datatype-values.

Each constructor funcon 'F(_:T_1,...,_:T_n)' of the datatype declaration generates values in T of the form datatype-value("F", $V_1, \cdots, V_n$) from $V_1 : T_1$, ..., $V_n : T_n$.

Note that a computation X cannot be directly included in datatype values: it is necessary to encapsulate it in abstraction(X).

'Datatype T', followed by declarations of constructor funcons for 'T', allows specification of GADTs.

> *Built-in Type* datatype-values

> *Built-in Funcon* datatype-value(_ : identifiers, _ : values *) : datatype-values

> *Funcon* datatype-value-id(_ : datatype-values) : $\Rightarrow$ identifiers
> > *Rule* datatype-value-id(datatype-value(I : identifiers, _* : values *)) $\rightsquigarrow I$

Funcon datatype-value-elements(_ : datatype-values) : $\Rightarrow$ values *

Rule datatype-value-elements(datatype-value(_ : identifiers, V^* : values *)) $\rightsquigarrow V^*$