Funcons-beta: Generating

The PLanCompS Project

`Funcons-beta/Computations/Normal/Generating/Generating.cbs`*

Generating

[*Type* atoms
Entity used-atom-set
Funcon initialise-generating
Funcon fresh-atom
Funcon use-atom-not-in]

Meta-variables T <: values

Built-in Type atoms

atoms is the type of values used as distinguishable tags. Notation for individual atoms is not provided.

Entity $\langle \_, \text{used-atom-set}(\_ : \text{sets}(\text{atoms}))\rangle \longrightarrow \langle \_, \text{used-atom-set}(\_ : \text{sets}(\text{atoms}))\rangle$

Built-in Funcon $\text{initialise-generating}(\_ : \Rightarrow T) : \Rightarrow T$

The initial value of the used-atom-set(SA) entity is unspecified. It could contains atoms that are reserved for internal use.

Funcon fresh-atom : ⇒ atoms

fresh-atom computes an atom distinct from all previously computed atoms.

*Suggestions for improvement: `plancomps@gmail.com`.
Issues: `https://github.com/plancomps/CBS-beta/issues`.

$$\textit{Rule}\ \frac{\mathsf{element\text{-}not\text{-}in}(\mathsf{atoms}, SA) \rightsquigarrow A}{\langle \mathsf{fresh\text{-}atom}, \mathsf{used\text{-}atom\text{-}set}(SA)\rangle \longrightarrow \langle A, \mathsf{used\text{-}atom\text{-}set}(\mathsf{set\text{-}insert}(A, SA))\rangle}$$

Funcon $\mathsf{use\text{-}atom\text{-}not\text{-}in}(\_ : \mathsf{sets}(\mathsf{atoms})) : \Rightarrow \mathsf{atoms}$

$\mathsf{use\text{-}atom\text{-}not\text{-}in}(SA)$ computes an atom not in the set SA, and inserts it in the $\mathsf{used\text{-}atom\text{-}set}(SA')$ entity, in case it was not previously used.

$$\textit{Rule}\ \frac{\mathsf{element\text{-}not\text{-}in}(\mathsf{atoms}, SA) \rightsquigarrow A}{\langle \mathsf{use\text{-}atom\text{-}not\text{-}in}(SA : \mathsf{sets}(\mathsf{atoms})), \mathsf{used\text{-}atom\text{-}set}(SA')\rangle \longrightarrow \langle A, \mathsf{used\text{-}atom\text{-}set}(\mathsf{set\text{-}insert}(A, SA'))\rangle}$$