

Funcons-beta: Generating *

The PPlanCompS Project

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Generating

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

Meta-variables $T <: \text{values}$

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** : $\Rightarrow \text{atoms}$

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

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

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

use-atom-not-in(SA) computes an atom not in the set SA, and inserts it in the **used-atom-set**(SA') entity, in case it was not previously used.

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

*Suggestions for improvement: plancomps@gmail.com.
Reports of issues: <https://github.com/plancomps/CBS-beta/issues>.