

# Funcons-beta: Generating \*

The PPlanCompS Project

Generating.cbs | PLAIN | PRETTY

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

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\*Suggestions for improvement: [plancomps@gmail.com](mailto:plancomps@gmail.com).  
Reports of issues: <https://github.com/plancomps/CBS-beta/issues>.