

rfunction_com2^{12,41}

The ' $\{f \mid x:A \rightarrow B\}$ ' type is the type of functions with domain ' A ' and range type ' $B(f,x)$ ' on argument ' x ', where ' f ' is the function itself. That is, this is a type of highly dependent functions, whose range type depends on calls to the function itself. In this version, the domain type ' A ' must be well-founded with some relation ' R ', and the calls to the function in the range ' B ' must always obey ' R '.

Here is a formal description of the type, along with its members.

We define ' $\{f \mid x:A \rightarrow B\}$ ' to be a type with membership ' ϕ ' iff

there is an ' α ' such that

1. ' A ' is a type with membership ' α '
2. ' A ' is well-founded with respect to some partial order ' R '
3. for any ' a ' such that ' $\alpha(a)$ '
there is a ' $\gamma_?$ ' such that
for all ' $b \ R \ a$ ',
 1. ' $\{f \mid x:\{c:A \mid c \ R \ b\} \rightarrow B\}$ ' is a type with membership ' γ_b ',
 2. there is a ' $\beta_?$ ' such that
 1. for any ' g ' such that ' $\gamma_b(g)$ ',
' $B(g,b)$ ' is a type with membership ' β_g '
 2. for any ' f ', ' $\phi(f)$ ' iff
for all ' a ' such that ' $\alpha(a)$ ', ' $\beta_a(f(a))$ '