

# t7\_extpro\_1 (TMN- MEbx5eiH3H7aFZsdXasfkp9GtZDkm1VN)

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Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v1\_setfam\_1 : \iota \Rightarrow o$  be given. Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v2\_memstr\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_memstr\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_extpro\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l1\_extpro\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v4\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_numbers : \iota$  be given. Let  $v5\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_compos\_1 : \iota \Rightarrow \iota$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_partfun1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v5\_funct\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_memstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_numbers : \iota$  be given. Let  $k3\_compos\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_memstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_extpro\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_compos\_1 : \iota \Rightarrow \iota$  be given. Let  $k6\_extpro\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k4\_ordinal1 : \iota$  be given. Let  $l1\_compos\_1 : \iota \Rightarrow o$  be given. Let  $v7\_ordinal1 : \iota \Rightarrow o$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k9\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $v3\_ordinal1 : \iota \Rightarrow o$  be given. Let  $l1\_memstr\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_extpro\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_extpro\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k7\_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0. \forall X1. (m1\_subset\_1 X0 X1) \Rightarrow ((v1\_xboole\_0 X1) \vee (X0 \in X1)) \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. ((\neg v1\_xboole\_0 X0) \wedge ((\neg v1\_xboole\_0 X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)))) \Rightarrow (\forall X2. (m2\_subset\_1 X2 X0 X1) \Leftrightarrow (m1\_subset\_1 X2 X1)) \quad (2)$$

Assume the following.

$$k5\_numbers = k4\_ordinal1 \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((l1\_compos\_1 X0)\wedge(((v1\_relat\_1 \\ & X1)\wedge((v4\_relat\_1 X1 k5\_numbers)\wedge((v5\_relat\_1 X1 (u1\_compos\_1 \\ & X0))\wedge((v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 k5\_numbers))))))\wedge(v7\_ordinal1 \\ & X2)))\Rightarrow(k3\_compos\_1 X0 X1 X2 = k1\_funct\_1 X1 X2) \end{aligned} \quad (4)$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1 X1)\wedge(v4\_relat\_1 X1 X0))\Rightarrow(k1\_relset\_1 X0 X1 = k9\_xtuple\_0 X1) \quad (5)$$

Assume the following.

$$(\neg v1\_xboole\_0 k4\_ordinal1)\wedge(v3\_ordinal1 k4\_ordinal1) \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.(l1\_extpro\_1 X1 X0)\Rightarrow((l1\_memstr\_0 X1 X0)\wedge(l1\_compos\_1 X1)) \quad (7)$$

Assume the following.

$$m1\_subset\_1 k5\_numbers (k1\_zfmisc\_1 k1\_numbers) \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((\neg v1\_setfam\_1 X0)\wedge(((\neg v2\_struct\_0 \\ & X1)\wedge((v2\_memstr\_0 X1 X0)\wedge((v3\_memstr\_0 X1 X0)\wedge(l1\_memstr\_0 X1 \\ & X0))))\wedge((v1\_relat\_1 X2)\wedge((v4\_relat\_1 X2 (u1\_struct\_0 X1))\wedge( \\ & (v1\_funct\_1 X2)\wedge(v5\_funct\_1 X2 (k2\_memstr\_0 X0 X1))))))\Rightarrow(m2\_subset\_1 \\ & (k5\_memstr\_0 X0 X1 X2) k1\_numbers k5\_numbers) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((\neg v1\_setfam\_1 \\ & X0)\wedge(((\neg v2\_struct\_0 X1)\wedge((v2\_memstr\_0 X1 X0)\wedge((v3\_memstr\_0 \\ & X1 X0)\wedge(l1\_extpro\_1 X1 X0))))\wedge(((v1\_relat\_1 X2)\wedge((v4\_relat\_1 \\ & X2 k5\_numbers)\wedge((v5\_relat\_1 X2 (u1\_compos\_1 X1))\wedge(v1\_funct\_1 \\ & X2))))\wedge(((v1\_relat\_1 X3)\wedge((v4\_relat\_1 X3 (u1\_struct\_0 X1))\wedge \\ & ((v1\_funct\_1 X3)\wedge((v5\_funct\_1 X3 (k2\_memstr\_0 X0 X1))\wedge(v1\_partfun1 \\ & X3 (u1\_struct\_0 X1))))))\wedge(v7\_ordinal1 X4))))\Rightarrow((v1\_relat\_1 \\ & (k5\_extpro\_1 X0 X1 X2 X3 X4))\wedge((v4\_relat\_1 (k5\_extpro\_1 X0 X1 X2 \\ & X3 X4) (u1\_struct\_0 X1))\wedge((v1\_funct\_1 (k5\_extpro\_1 X0 X1 X2 X3 X4))\wedge \\ & ((v5\_funct\_1 (k5\_extpro\_1 X0 X1 X2 X3 X4) (k2\_memstr\_0 X0 X1))\wedge( \\ & v1\_partfun1 (k5\_extpro\_1 X0 X1 X2 X3 X4) (u1\_struct\_0 X1)))))) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v1\_xboole\_0 X0) \wedge (\neg v1\_setfam\_1 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2\_struct\_0 X1) \wedge ((v2\_memstr\_0 X1 X0) \wedge ((v3\_memstr\_0 X1 X0) \wedge \\
& ((v3\_extpro\_1 X1 X0) \wedge (l1\_extpro\_1 X1 X0)))))) \Rightarrow (\forall X2.((v1\_relat\_1 \\
& X2) \wedge ((v4\_relat\_1 X2 k5\_numbers) \wedge ((v5\_relat\_1 X2 (u1\_compos\_1 \\
& X1)) \wedge (v1\_funct\_1 X2)))))) \Rightarrow (\forall X3.((v1\_relat\_1 X3) \wedge ((v4\_relat\_1 \\
& X3 (u1\_struct\_0 X1)) \wedge ((v1\_funct\_1 X3) \wedge ((v5\_funct\_1 X3 (k2\_memstr\_0 \\
& X0 X1)) \wedge (v1\_partfun1 X3 (u1\_struct\_0 X1)))))) \Rightarrow ((r1\_extpro\_1 \\
& X0 X1 X2 X3) \Rightarrow (\forall X4.((v1\_relat\_1 X4) \wedge ((v4\_relat\_1 X4 (u1\_struct\_0 \\
& X1)) \wedge ((v1\_funct\_1 X4) \wedge ((v5\_funct\_1 X4 (k2\_memstr\_0 X0 X1)) \wedge ( \\
& v1\_partfun1 X4 (u1\_struct\_0 X1)))))) \Rightarrow ((X4 = k6\_extpro\_1 X0 X1 X2 \\
& X3) \Leftrightarrow (\exists X5.(m2\_subset\_1 X5 k1\_numbers k5\_numbers) \wedge ((X4 = \\
& k5\_extpro\_1 X0 X1 X2 X3 X5) \wedge (k3\_extpro\_1 X0 X1 X2 X4 = k2\_compos\_1 \\
& X1)))))))))
\end{aligned} \tag{11}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(\neg v1\_setfam\_1 X0) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge \\
& ((v2\_memstr\_0 X1 X0) \wedge ((v3\_memstr\_0 X1 X0) \wedge ((v3\_extpro\_1 X1 X0) \wedge \\
& (l1\_extpro\_1 X1 X0)))))) \Rightarrow (\forall X2.((v1\_relat\_1 X2) \wedge ((v4\_relat\_1 \\
& X2 k5\_numbers) \wedge ((v5\_relat\_1 X2 (u1\_compos\_1 X1)) \wedge (v1\_funct\_1 \\
& X2)))))) \Rightarrow (\forall X3.((v1\_relat\_1 X3) \wedge ((v4\_relat\_1 X3 (u1\_struct\_0 \\
& X1)) \wedge ((v1\_funct\_1 X3) \wedge ((v5\_funct\_1 X3 (k2\_memstr\_0 X0 X1)) \wedge ( \\
& v1\_partfun1 X3 (u1\_struct\_0 X1)))))) \Rightarrow ((r1\_extpro\_1 X0 X1 X2 X3) \Leftrightarrow \\
& (\exists X4.(v7\_ordinal1 X4) \wedge ((k5\_memstr\_0 X0 X1 (k5\_extpro\_1 \\
& X0 X1 X2 X3 X4) \in k9\_xtuple\_0 X2) \wedge (k3\_extpro\_1 X0 X1 X2 (k5\_extpro\_1 \\
& X0 X1 X2 X3 X4) = k2\_compos\_1 X1))))))
\end{aligned} \tag{12}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(\neg v1\_setfam\_1 X0) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge \\
& ((v2\_memstr\_0 X1 X0) \wedge ((v3\_memstr\_0 X1 X0) \wedge (l1\_memstr\_0 X1 X0)))) \Rightarrow \\
& (\forall X2.((v1\_relat\_1 X2) \wedge ((v4\_relat\_1 X2 (u1\_struct\_0 X1)) \wedge \\
& ((v1\_funct\_1 X2) \wedge (v5\_funct\_1 X2 (k2\_memstr\_0 X0 X1)))))) \Rightarrow (k5\_memstr\_0 \\
& X0 X1 X2 = k1\_funct\_1 X2 (k4\_struct\_0 X1)))
\end{aligned} \tag{13}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.((v1\_relat\_1 X1) \wedge ((v5\_relat\_1 X1 X0) \wedge ( \\
& v1\_funct\_1 X1))) \Rightarrow (\forall X2.(X2 \in k9\_xtuple\_0 X1) \Rightarrow (k7\_partfun1 \\
& X0 X1 X2 = k1\_funct\_1 X1 X2))
\end{aligned} \tag{14}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(\neg v1\_setfam\_1 X0) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge \\
& ((v2\_memstr\_0 X1 X0) \wedge ((v3\_memstr\_0 X1 X0) \wedge (l1\_extpro\_1 X1 X0)))) \Rightarrow \\
& (\forall X2.((v1\_relat\_1 X2) \wedge ((v5\_relat\_1 X2 (u1\_compos\_1 X1)) \wedge \\
& (v1\_funct\_1 X2))) \Rightarrow (\forall X3.((v1\_relat\_1 X3) \wedge ((v4\_relat\_1 \\
& X3 (u1\_struct\_0 X1)) \wedge ((v1\_funct\_1 X3) \wedge ((v5\_funct\_1 X3 (k2\_memstr\_0 \\
& X0 X1)) \wedge (v1\_partfun1 X3 (u1\_struct\_0 X1)))))) \Rightarrow (k3\_extpro\_1 X0 \\
& X1 X2 X3 = k7\_partfun1 (u1\_compos\_1 X1) X2 (k5\_memstr\_0 X0 X1 X3)))))) \\
& \hspace{15em} (15)
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. ((v1\_relat\_1 X1) \wedge (v4\_relat\_1 X1 X0)) \Rightarrow ( \\
& (v1\_partfun1 X1 X0) \Leftrightarrow (k1\_relset\_1 X0 X1 = X0)) \\
& \hspace{15em} (16)
\end{aligned}$$

Assume the following.

$$\forall X0. (m1\_subset\_1 X0 k4\_ordinal1) \Rightarrow (v7\_ordinal1 X0) \hspace{15em} (17)$$

Assume the following.

$$\begin{aligned}
& \forall X0. (v1\_xboole\_0 X0) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (k1\_zfmisc\_1 \\
& X0)) \Rightarrow (v1\_xboole\_0 X1)) \\
& \hspace{15em} (18)
\end{aligned}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0. ((\neg v1\_xboole\_0 X0) \wedge (\neg v1\_setfam\_1 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2\_struct\_0 X1) \wedge ((v2\_memstr\_0 X1 X0) \wedge ((v3\_memstr\_0 X1 X0) \wedge \\
& ((v3\_extpro\_1 X1 X0) \wedge (l1\_extpro\_1 X1 X0)))))) \Rightarrow (\forall X2. ((v1\_relat\_1 \\
& X2) \wedge ((v4\_relat\_1 X2 k5\_numbers) \wedge ((v5\_relat\_1 X2 (u1\_compos\_1 \\
& X1)) \wedge ((v1\_funct\_1 X2) \wedge (v1\_partfun1 X2 k5\_numbers)))))) \Rightarrow (\forall X3. \\
& ((v1\_relat\_1 X3) \wedge ((v4\_relat\_1 X3 (u1\_struct\_0 X1)) \wedge ((v1\_funct\_1 \\
& X3) \wedge ((v5\_funct\_1 X3 (k2\_memstr\_0 X0 X1)) \wedge (v1\_partfun1 X3 (u1\_struct\_0 \\
& X1)))))) \Rightarrow (\forall X4. (m2\_subset\_1 X4 k1\_numbers k5\_numbers) \Rightarrow \\
& ((k3\_compos\_1 X1 X2 (k5\_memstr\_0 X0 X1 (k5\_extpro\_1 X0 X1 X2 X3 X4)) = \\
& k2\_compos\_1 X1) \Rightarrow (k6\_extpro\_1 X0 X1 X2 X3 = k5\_extpro\_1 X0 X1 X2 X3 \\
& X4))))))
\end{aligned}$$