

# t55\_exchsort (TMPEG- NAL3apS5gBCouPYVrAzFecNGEDUzcK)

October 27, 2020

Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v3\_orders\_2 : \iota \Rightarrow o$  be given. Let  $v4\_orders\_2 : \iota \Rightarrow o$  be given. Let  $v5\_orders\_2 : \iota \Rightarrow o$  be given. Let  $v16\_waybel\_0 : \iota \Rightarrow o$  be given. Let  $l1\_orders\_2 : \iota \Rightarrow o$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v5\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_exchsort : \iota \Rightarrow o$  be given. Let  $k4\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_exchsort : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k10\_funct\_7 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k9\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r2\_orders\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k7\_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_tarski : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0.((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow (\forall X1. \forall X2. k9\_xtuple\_0 (k10\_funct\_7 X0 X1 X2) = k9\_xtuple\_0 X0) \quad (1)$$

Assume the following.

$$\begin{aligned} \forall X0.((v4\_orders\_2 X0) \wedge ((v5\_orders\_2 X0) \wedge (l1\_orders\_2 X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\ (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 \\ (u1\_struct\_0 X0)) \Rightarrow (((r2\_orders\_2 X0 X1 X2) \wedge (r2\_orders\_2 X0 X2 \\ X3)) \Rightarrow (r2\_orders\_2 X0 X1 X3)))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. \forall X2. ((\neg v2\_struct\_0 X2) \wedge ((v3\_orders\_2 X2) \wedge ((v4\_orders\_2 X2) \wedge ((v5\_orders\_2 X2) \wedge ((v16\_waybel\_0 X2) \wedge \\ (l1\_orders\_2 X2)))))) \Rightarrow (\forall X3.((v1\_relat\_1 X3) \wedge ((v5\_relat\_1 X3 (u1\_struct\_0 X2)) \wedge ((v1\_funct\_1 X3) \wedge (v1\_exchsort X3)))) \Rightarrow ( \\ (k4\_tarski X0 X1 \in k6\_exchsort X2 X3) \Leftrightarrow ((X0 \in k9\_xtuple\_0 X3) \wedge ((X1 \in k9\_xtuple\_0 X3) \wedge ((X0 \in X1) \wedge (r2\_orders\_2 X2 (k7\_partfun1 (u1\_struct\_0 X2) X3 X1) (k7\_partfun1 (u1\_struct\_0 X2) X3 X0))))))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((v1\_relat\_1 \\ & X4)\wedge((v5\_relat\_1 X4 X0)\wedge((v1\_funct\_1 X4)\wedge(v1\_exhsort X4))))\Rightarrow \\ & ((X1 \in k9\_xtuple\_0 X4)\Rightarrow((X1 = X2)\vee((X1 = X3)\vee(k7\_partfun1 X0 (k10\_funct\_7 \\ & X4 X2 X3) X1 = k7\_partfun1 X0 X4 X1)))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((v1\_relat\_1 X3)\wedge \\ & ((v5\_relat\_1 X3 X0)\wedge((v1\_funct\_1 X3)\wedge(v1\_exhsort X3))))\Rightarrow(( \\ & (X1 \in k9\_xtuple\_0 X3)\wedge(X2 \in k9\_xtuple\_0 X3))\Rightarrow(k7\_partfun1 X0 (k10\_funct\_7 \\ & X3 X1 X2) X1 = k7\_partfun1 X0 X3 X2)) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((v1\_relat\_1 X1)\wedge \\ & ((v5\_relat\_1 X1 X0)\wedge(v1\_funct\_1 X1)))\Rightarrow(v5\_relat\_1 (k10\_funct\_7 \\ & X1 X2 X3) X0) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((v1\_relat\_1 X0)\wedge(v1\_funct\_1 \\ & X0))\Rightarrow((v1\_relat\_1 (k10\_funct\_7 X0 X1 X2))\wedge(v1\_funct\_1 (k10\_funct\_7 \\ & X0 X1 X2))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((v1\_relat\_1 X0)\wedge((v1\_funct\_1 \\ & X0)\wedge(v1\_exhsort X0)))\Rightarrow(v1\_exhsort (k10\_funct\_7 X0 X1 X2)) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((v1\_relat\_1 X1)\wedge((v5\_relat\_1 \\ & X1 X0)\wedge(v1\_funct\_1 X1)))\Rightarrow(m1\_subset\_1 (k7\_partfun1 X0 X1 X2) X0) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.k4\_tarski X0 X1 = k2\_tarski (k2\_tarski X0 \\ & X1) (k1\_tarski X0) \end{aligned} \quad (10)$$

Assume the following.

$$\forall X0.\forall X1.k2\_tarski X0 X1 = k2\_tarski X1 X0 \quad (11)$$

Assume the following.

$$\forall X0.\forall X1.(X0 \in X1)\Rightarrow(\neg X1 \in X0) \quad (12)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((\neg v2\_struct\_0 X3)\wedge \\ & ((v3\_orders\_2 X3)\wedge((v4\_orders\_2 X3)\wedge((v5\_orders\_2 X3)\wedge((v16\_waybel\_0 \\ & X3)\wedge(l1\_orders\_2 X3))))))\Rightarrow(\forall X4.((v1\_relat\_1 X4)\wedge((v5\_relat\_1 \\ & X4 (u1\_struct\_0 X3))\wedge((v1\_funct\_1 X4)\wedge(v1\_exhsort X4))))\Rightarrow( \\ & ((k4\_tarski X0 X1 \in k6\_exhsort X3 X4)\wedge((X2 \in X1)\wedge(k4\_tarski X0 X2 \in \\ & k6\_exhsort X3 (k10\_funct\_7 X4 X0 X1))))\Rightarrow(k4\_tarski X0 X2 \in k6\_exhsort \\ & X3 X4)) \end{aligned}$$