

t56_exchsort
(TMK1sf2z86xG4hdkWsYrHA3usya8i6MiDwT)

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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 $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r1_orders_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ 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.

$$\begin{aligned} & \forall X0.((v4_orders_2 X0) \wedge ((v5_orders_2 X0) \wedge (l1_orders_2 X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\ & (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 \\ & (u1_struct_0 X0)) \Rightarrow (((r2_orders_2 X0 X1 X2) \wedge (r2_orders_2 X0 X2 X3)) \Rightarrow (r2_orders_2 X0 X1 X3)))))) \quad (2) \end{aligned}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((\neg v2_struct_0 X2) \wedge ((v3_orders_2 X2) \wedge ((v4_orders_2 X2) \wedge ((v5_orders_2 X2) \wedge ((v16_waybel_0 X2) \wedge \\ & (l1_orders_2 X2)))))) \Rightarrow (\forall X3. ((v1_relat_1 X3) \wedge ((v5_relat_1 X3 (u1_struct_0 X2)) \wedge ((v1_funct_1 X3) \wedge (v1_exchsort X3)))) \Rightarrow (\\ & (k4_tarski X0 X1 \in k6_exchsort X2 X3) \Leftrightarrow ((X0 \in k9_xtuple_0 X3) \wedge ((X1 \in k9_xtuple_0 X3) \wedge ((X0 \in X1) \wedge (r2_orders_2 X2 (k7_partfun1 (u1_struct_0 X2) X3 X1) (k7_partfun1 (u1_struct_0 X2) X3 X0))))))) \quad (3) \end{aligned}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((v1_relat_1 \\ & X4)\wedge((v5_relat_1 X4 X0)\wedge((v1_funct_1 X4)\wedge(v1_exchsort X4))))\Rightarrow \\ & ((X1 \in k9_xtuple_0 X4)\Rightarrow((X1 = X2)\vee((X1 = X3)\vee(k7_partfun1 X0 (k10_funct_7 \\ & X4 X2 X3) X1 = k7_partfun1 X0 X4 X1)))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((v1_relat_1 X3)\wedge \\ & ((v5_relat_1 X3 X0)\wedge((v1_funct_1 X3)\wedge(v1_exchsort X3))))\Rightarrow((\\ & (X1 \in k9_xtuple_0 X3)\wedge(X2 \in k9_xtuple_0 X3))\Rightarrow(k7_partfun1 X0 (k10_funct_7 \\ & X3 X1 X2) X2 = k7_partfun1 X0 X3 X1)) \end{aligned} \quad (5)$$

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.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((v1_relat_1 X0)\wedge((v1_funct_1 \\ & X0)\wedge(v1_exchsort X0)))\Rightarrow(v1_exchsort (k10_funct_7 X0 X1 X2)) \end{aligned} \quad (8)$$

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.

$$\begin{aligned} & \forall X0.\forall X1.((v1_relat_1 X1)\wedge((v5_relat_1 X1 X0)\wedge(\\ & v1_funct_1 X1)))\Rightarrow(\forall X2.(X2 \in k9_xtuple_0 X1)\Rightarrow(k7_partfun1 \\ & X0 X1 X2 = k1_funct_1 X1 X2)) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l1_orders_2 X0)\Rightarrow(\forall X1.(m1_subset_1 X1 (u1_struct_0 \\ & X0))\Rightarrow(\forall X2.(m1_subset_1 X2 (u1_struct_0 X0))\Rightarrow((r2_orders_2 \\ & X0 X1 X2)\Leftrightarrow((r1_orders_2 X0 X1 X2)\wedge(X1\neq X2)))) \end{aligned} \quad (11)$$

Theorem 1

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((\neg v2_struct_0 X3)\wedge \\ & ((v3_orders_2 X3)\wedge((v4_orders_2 X3)\wedge((v5_orders_2 X3)\wedge((v16_waybel_0 \\ & X3)\wedge(l1_orders_2 X3))))))\Rightarrow(\forall X4.((v1_relat_1 X4)\wedge((v5_relat_1 \\ & X4 (u1_struct_0 X3))\wedge((v1_funct_1 X4)\wedge(v1_exhsort X4))))\Rightarrow(\\ & ((k4_tarski X0 X1 \in k6_exhsort X3 X4)\wedge((X0 \in X2)\wedge(k4_tarski X2 X1 \in \\ & k6_exhsort X3 (k10_funct_7 X4 X0 X1))))\Rightarrow(k4_tarski X2 X1 \in k6_exhsort \\ & X3 X4)) \end{aligned}$$