

# t31\_exchsort (TM- FYGL6VWqLyVzgQkVAWZpYNrwYNvuorrDE)

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Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $k9\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k10\_funct\_7 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_funct\_7 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0.((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow (\forall X1. \forall X2. \\ & (X2 \in k9\_xtuple\_0 X0) \Rightarrow (k1\_funct\_1 (k2\_funct\_7 X0 X2 X1) X2 = X1)) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0.((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow (\forall X1. \forall X2. \\ & k9\_xtuple\_0 (k2\_funct\_7 X0 X2 X1) = k9\_xtuple\_0 X0) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((v1\_relat\_1 X0) \wedge (v1\_funct\_1 \\ & X0)) \Rightarrow ((v1\_relat\_1 (k2\_funct\_7 X0 X1 X2)) \wedge (v1\_funct\_1 (k2\_funct\_7 \\ & X0 X1 X2))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow (\forall X1. \forall X2. \\ & (((X1 \in k9\_xtuple\_0 X0) \wedge (X2 \in k9\_xtuple\_0 X0)) \Rightarrow (k10\_funct\_7 X0 \\ & X1 X2 = k2\_funct\_7 (k2\_funct\_7 X0 X1 (k1\_funct\_1 X0 X2)) X2 (k1\_funct\_1 \\ & X0 X1))) \wedge ((\neg (X1 \in k9\_xtuple\_0 X0) \wedge (X2 \in k9\_xtuple\_0 X0)) \Rightarrow (k10\_funct\_7 \\ & X0 X1 X2 = X0))) \end{aligned} \quad (4)$$

**Theorem 1**

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((v1\_relat\_1 X2) \wedge (v1\_funct\_1 \\ & X2)) \Rightarrow (((X0 \in k9\_xtuple\_0 X2) \wedge (X1 \in k9\_xtuple\_0 X2)) \Rightarrow (k1\_funct\_1 \\ & (k10\_funct\_7 X2 X0 X1) X1 = k1\_funct\_1 X2 X0)) \end{aligned}$$