

$$1. \text{Unify}(real \rightarrow t_4, t_5 \rightarrow (string \rightarrow int))$$

$$T_1 = (real \rightarrow t_4)$$

$$T_2 = t_5 \rightarrow (string \rightarrow int)$$

$$\text{Unify}(T_1, T_2)$$

$$\text{Unify}(real, t_5)$$

$$\text{To var Add} \{ t_5 = real \}$$

$$\text{Unify}(t_4, string \rightarrow int)$$

$$\text{Add} \{ t_4 = string \rightarrow int \}$$

$$S = \{ t_5 = real, t_4 = string \rightarrow int \}$$

$$S(T_1) = real \rightarrow string \rightarrow int$$

$$S(T_2) = real \rightarrow string \rightarrow int$$

$$2. \text{unify}(t_1 \rightarrow (t_2 \rightarrow \text{real}), \text{int} \rightarrow ((t_3 \text{ list}) \rightarrow \text{real}))$$

$$\tau_1 = t_1 \rightarrow (t_2 \rightarrow \text{real})$$

$$\tau_2 = \text{int} \rightarrow ((t_3 \text{ list}) \rightarrow \text{real})$$

$$\text{unify}(t_1, \text{int})$$

$$\text{Add } t_1 = \text{int}$$

$$S = \{ t_1 = \text{int} \}$$

$$t_2 = t_3 \text{ list}$$

$$S(F_1) = t_3 \text{ list} \rightarrow \text{real}$$

$$S(F_2) = t_3 \text{ list} \rightarrow \text{real}$$

$$S(\tau_1) = \text{int} \rightarrow t_3 \text{ list} \rightarrow \text{real}$$

$$S(\tau_2) = \text{int} \rightarrow t_3 \text{ list} \rightarrow \text{real}$$

$$\text{unify}(t_2 \rightarrow \text{real})$$

$$\text{unify}(t_2 \rightarrow \text{real})$$

$$(t_3 \text{ list}) \rightarrow \text{real}$$

$$\text{unify}(t_2, t_3 \text{ list})$$

$$\text{Add } t_2 = t_3 \text{ list}$$

$$\text{unify}(\text{real}, \text{real})$$

$$3. \text{unify}(\text{list list}, t_6 \text{ list})$$

$$\tau_1 = \text{list list}$$

$$\tau_2 = (t_6 \text{ list})$$

$$\text{Add } t_6 \text{ list} = \text{list list}$$

$$S(\tau_1) = \text{list list}$$

$$S(\tau_2) = \text{list list}$$

$$4. \text{unify}((t_7 \text{ list}) \times t_8, (t_9 \times (t_{10} \text{ list})) \times t_9)$$

$$\tau_1 = ((t_7 \text{ list}) \times t_8) \times t_8$$

$$\tau_2 = (t_9 \times (t_{10} \text{ list})) \times t_9$$

$$\text{unify}(t_7 \text{ list} \times t_8, t_9 \times t_{10} \text{ list})$$

$$\text{unify}(t_7 \text{ list} \times t_9)$$

$$\text{unify}(t_8 \times t_{10} \text{ list})$$

$$\text{add}(t_9 = t_7 \text{ list})$$

$$\text{Add}(t_8 = t_{10} \text{ list})$$

$$S = \{ t_9 = t_7 \text{ list} \quad t_8 = t_{10} \text{ list} \}$$

$$\rightarrow \text{unify}(t_8, t_9)$$

$$\text{unify}(t_7 \text{ list} \underset{F_1}{\overset{F}{\times}} t_{10} \text{ list}), (t_7 \text{ list} \underset{F_L}{\times} t_{10} \text{ list}))$$

$$S(F_1) = \{t_7 \text{ list} \times t_{10} \text{ list}\}$$

$$S(F_2) = \{t_7 \text{ list} \times t_{10} \text{ list}\}$$

$$S(T_1) = \{(t_7 \text{ list} \times t_{10} \text{ list}) \times t_{10} \text{ list}\}$$

$$S(T_2) = \{(t_7 \text{ list} \times t_{10} \text{ list}) \times t_7 \text{ list}\}$$