[Cons] $\dfrac{\hat{\Gamma} \vdash_{CFA} e_1 : \hat{\tau} \quad \hat{\Gamma} \vdash_{CFA} e_2 : \hat{\tau}\ list}{\hat{\Gamma} \vdash_{CFA} Cons(e_1, e_2) : \hat{\tau}\ list}$

$\mathcal{W}_{CFA}(\hat{\Gamma}, cons_{\pi}(e_1, e_2)) =$

Let β_0 be fresh

$(\hat{\tau}_1, \Theta_1, C_1) = \mathcal{W}_{CFA}(\hat{\Gamma}, e_1)$

$(\hat{\tau}_2, \Theta_2, C_2) = \mathcal{W}_{CFA}(\hat{\Gamma}, e_2)$

$\Theta_3 = \mathcal{U}_{CFA}(\hat{\tau}_2, \Theta_2 \hat{\tau}_1)$

in $(\hat{\tau}_2\ list, \Theta_3 \circ \Theta_2 \circ \Theta_1, (\Theta_3(\Theta_2 C_1) \cup (\Theta_3 C_2) \cup \{\beta_0 \supseteq \{\pi\}\}))$

Above case is applicable when e_2 is not a type of Nil expression. Allowed e2 expressions are Cons, TVar and FunApp.

[Nil] $\dfrac{}{\hat{\Gamma} \vdash_{CFA} Nil : \hat{\tau}\ list}$

$\mathcal{W}_{CFA}(\hat{\Gamma}, cons_{\pi}(e_1, e_2)) =$

Let β_0 be fresh

$(\hat{\tau}_1, \Theta_1, C_1) = \mathcal{W}_{CFA}(\hat{\Gamma}, e_1)$

in $(\hat{\tau}_1\ list, \Theta_1, (C_1 \cup \{\beta_0 \supseteq \{\pi\}\}))$

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[Case] $\hat{\Gamma} \vdash_{CFA} e_0 : \hat{\tau}\ list$ $\hat{\Gamma} \vdash_{CFA} Cons(x_1, x_2) : \hat{\tau}\ list$

$\hat{\Gamma} \vdash_{CFA} e_1 : \hat{\tau}$ $\hat{\Gamma} \vdash_{CFA} e_2 : \hat{\tau}\ list$ $\hat{\Gamma} \vdash_{CFA} Nil : \hat{\tau}\ list$

$\hat{\Gamma} \vdash_{CFA} Case\ e_0\ of\ Cons(x_1, x_2) \Rightarrow e_1\ or\ Nil \Rightarrow e_2 : \hat{\tau}\ list$

$\mathcal{W}_{CFA}(\hat{\Gamma}, case\ e_0\ of\ Cons(x_1, x_2) \Rightarrow e_2\ or\ Nil \Rightarrow e_3)$

Let α_0 be fresh

and $Cons(x_1, x_2)$ be e_1

$\mathcal{W}_{CFA}(\hat{\Gamma}, case\ e_0\ of\ e_1 \Rightarrow e_2\ or\ Nil \Rightarrow e_3)$

$(\hat{\tau}_0, \theta_0, C_0) = \mathcal{W}_{CFA}((\theta_0 \hat{\Gamma}), [e_0])$

$(\hat{\tau}_1, \theta_1, C_1) = \mathcal{W}_{CFA}((\theta_0 \hat{\Gamma})[x_1 \mapsto \alpha_0][x_2 \mapsto \alpha_0\ list]), e1)$

$(\hat{\tau}_2, \theta_2, C_2) = \mathcal{W}_{CFA}((\theta_1(\theta_0 \hat{\Gamma})), e2)$

$(\hat{\tau}_3, \theta_3, C_3) = \mathcal{W}_{CFA}((\theta_2(\theta_1(\theta_0 \hat{\Gamma}))), e3)$

$\theta_4 = \mathcal{U}_{CFA}(\theta_3(\theta_2 \hat{\tau}_1), \theta_3(\theta_2(\theta_1 \hat{\tau}_0)))$

~~$\theta_5 = \mathcal{U}_{CFA}(\theta_4(\theta_3($~~

$\theta_5 = \mathcal{U}_{CFA}(\theta_4 \hat{\tau}_3, \theta_4(\theta_3 \hat{\tau}_2))$

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in $(\theta_5(\theta_4\,\hat{c}_2)$,

$\theta_5 \circ \theta_4 \circ \theta_3 \circ \theta_2 \circ \theta_1 \circ \theta_0$,

$(\theta_5(\theta_4(\theta_3(\theta_2(\theta_1 c_0)))) \cup$

$\theta_5(\theta_4(\theta_3(\theta_2 c_1))) \cup$

$\theta_5(\theta_4(\theta_3 c_2)) \cup$

$\theta_5(\theta_4 c_3))$.

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