Yves

List Formation

$$\frac{T \text{ is a type}}{\text{LIST}(T) \text{ is a Type}}$$

Empty List

$$\frac{T \text{ is a type}}{\Gamma_\varepsilon, \Gamma_d, \Gamma_p \vdash \text{Empty List}() = \text{List}[T]}$$

Cons

$$\frac{\Gamma_\varepsilon, \Gamma_d, \Gamma_p \vdash c_1 = T \quad \Gamma_\varepsilon, \Gamma_d, \Gamma_p \vdash e_2 = \text{List}(T)}{\Gamma_\varepsilon, \Gamma_d, \Gamma_p \vdash \text{Cons}(e_2, e_2) = \text{LIST}(T)}$$

NULL

$$\frac{\Gamma_s, \Gamma_d, \Gamma_p \vdash e = \text{LIST}(T)}{\Gamma_\varepsilon, \Gamma_d, \Gamma_p \vdash \text{NULL?}(T) = \text{Bool}}$$

CAR

$$\frac{\Gamma_\varepsilon, \Gamma_d, \Gamma_p \vdash e = \text{List}(T)}{\Gamma_\varepsilon, \Gamma_d, \Gamma_p \vdash \text{CAR}(e) = T}$$

CDR

$$\frac{\Gamma_\varepsilon, \Gamma_d, \Gamma_p \vdash e = \text{LIST}(T)}{\Gamma_\varepsilon, \Gamma_d, \Gamma_p \vdash \text{CDR}(e) = \text{LIST}(T)}$$