COMP105 — Homework 05

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1 Formation

$$\frac{\tau \text{ is a type}}{\text{LIST}(\tau) \text{ is a type}} \text{ (ListFormation)}$$

2 Introduction

$$\frac{}{\Gamma_\xi, \Gamma_\phi, \Gamma_\rho \vdash \text{INTNIL} : \text{LIST(int)}} \text{ (IntList)}$$

$$\frac{}{\Gamma_\xi, \Gamma_\phi, \Gamma_\rho \vdash \text{BOOLNIL} : \text{LIST(bool)}} \text{ (BoolList)}$$

$$\frac{\Gamma_\xi, \Gamma_\phi, \Gamma_\rho \vdash e_1 : \tau \qquad \Gamma_\xi, \Gamma_\phi, \Gamma_\rho \vdash e_2 : \text{LIST}(\tau)}{\Gamma_\xi, \Gamma_\phi, \Gamma_\rho \vdash \text{CONS}(e_1, e_2) : \text{LIST}(\tau)} \text{ (Cons)}$$

3 Elimination

$$\frac{\Gamma_\xi, \Gamma_\phi, \Gamma_\rho \vdash e : \text{LIST}(\tau)}{\Gamma_\xi, \Gamma_\phi, \Gamma_\rho \vdash \text{CAR}(e) : \tau} \text{ (Car)}$$

$$\frac{\Gamma_\xi, \Gamma_\phi, \Gamma_\rho \vdash e : \text{LIST}(\tau)}{\Gamma_\xi, \Gamma_\phi, \Gamma_\rho \vdash \text{CDR}(e) : \text{LIST}(\tau)} \text{ (Cdr)}$$

$$\frac{\Gamma_\xi, \Gamma_\phi, \Gamma_\rho \vdash e : \text{LIST}(\tau)}{\Gamma_\xi, \Gamma_\phi, \Gamma_\rho \vdash \text{EMPTY?}(e) : \text{bool}} \text{ (Empty?)}$$