```
Syntax :

t            ::=                                          terms
                    x                                  variable
                    λx : T. t                      abstraction
                    t₁ t₂                           application

c                                              configurations
                    x [s]
                    λx : T. t [s]
                    t₁ t₂ [s]
                    c c
                    λx : T. t [s]                        clause
v            ::=                                         values

T            ::=                                          types
                    T → T                    type of functions

Γ            ::=                                        contexts
                    ∅                           empty context
                    Γ, x : T              term variable binding

[s]          ::=                        explicit substitutions
                    []                      empty substitutions
                    [(x, v) : s]      not empty substitutions
```

Cuadro 1: Syntax of the simply typed lambda-calculus with explicit substitution.

Typing terms : $\Gamma \vdash t : T$

$$\frac{x : T \in \Gamma}{\Gamma \vdash x : T} \quad \text{(TVar)}$$

$$\frac{\Gamma, x : T_1 \vdash t_2 : T_2}{\Gamma \vdash \lambda x : T_1.\ t_2 : T_1 \to T_2} \quad \text{(TAbs)}$$

$$\frac{\Gamma \vdash t_1 : T_{11} \to T_{12} \quad \Gamma \vdash t_2 : T_{11}}{\Gamma \vdash t_1\ t_2 : T_{12}} \quad \text{(TApp)}$$

Typing configurations : $\vdash_c c : T$

$$\frac{\vdash_c s(x) : T}{\vdash_c x\ [s] : T} \quad \text{(TCVar)}$$

$$\frac{\Gamma_s, x : T_1 \vdash t_2 : T_2}{\vdash_c \lambda x : T_1.\ t_2\ [s] : T_1 \to T_2} \quad \text{(TCAbs)}$$

$$\frac{\vdash_c t_1\ [s] : T_{11} \to T_{12} \quad \vdash_c t_2\ [s] : T_{11}}{\vdash_c t_1\ t_2\ [s] : T_{12}} \quad \text{(TCApp)}$$

$$\frac{\vdash_c c_1\ [s] : T_{11} \to T_{12} \quad \vdash_c c_2\ [s] : T_{11}}{\vdash_c c_1\ c_2\ [s] : T_{12}} \quad \text{(TCCApp)}$$

Cuadro 2: Typing rules for terms and configurations.

$$t_1 \ t_2 \ [s] \longrightarrow t_1[s] \ t_2[s] \qquad \text{(AppSub)}$$

$$x \ [(x,v):s] \longrightarrow v \qquad \text{(VarOk)}$$

$$x \ [(y,v):s] \longrightarrow x \ [s] \qquad \text{(VarFail)}$$

$$\lambda x : T_1. \ t_2 \ [s] \ v \longrightarrow t_2 \ [(x,v):s] \qquad (\beta)$$

$$\frac{c_1 \longrightarrow c_1'}{c_1 \ c_2 \longrightarrow c_1' \ c_2} \qquad (\nu)$$

$$\frac{c \longrightarrow c'}{\lambda x : T_1. \ t_2 \ [s] \ c \longrightarrow \lambda x : T_1. \ t_2 \ [s] \ c'} \qquad (\mu)$$

Cuadro 3: Evaluation Rules.