

```

let
  • f = proc (?x, int y)
    { if x then +(y, 1)
      else -(y, 1)
    }
in
  let
    • g = proc (?m, int n)
      (m true n)
  in
    let
      h = (g f 5)
    in
      g

```

1) proc

$$t_f = t_x * t_y \rightarrow t_2$$

$$t_g = t_m * t_n \rightarrow t_3$$

$$t_h = t_3$$

2) app-exp (evaluation)

(m true n)

$$t_m = \text{bool} * t_n \rightarrow t_4$$

(g f 5)

$$t_g = t_f * \text{int} \rightarrow t_5$$

$$t_f = \text{bool} * \text{int} \rightarrow \text{int}$$

$$t_x = \text{bool}$$

$$t_y = \text{int}$$

$$t_g = (\text{bool} * \text{int} \rightarrow \text{int}) * \text{int} \rightarrow \text{int}$$

$$t_m = \text{bool} * \text{int} \rightarrow \text{int}$$

$$t_n = \text{int}$$

$$t_h = \text{int}$$

$$t_1 = t_g$$

$$t_g = ((\text{bool} * \text{int} \rightarrow \text{int}) * \text{int} \rightarrow \text{int})$$

3) Red 1 y 2

$$t_g = ((\text{bool} * t_n) \rightarrow t_4) * t_n \rightarrow t_3$$

$$t_p = t_m$$

$$t_n = \text{int}$$

$$t_5 = t_3 = t_h$$

$$t_g = ((\text{bool} * \text{int}) \rightarrow t_4) * \text{int} \rightarrow t_h$$

$$t_x = \text{bool}$$

$$t_z = t_4$$

$$t_y = \text{int}$$

4) Internal proc

```

if x then +(y, 1)
else -(y, 1)

```

$$t_x = \text{int}$$

$$t_p = \text{bool} * \text{int} \rightarrow \text{int}$$

$$(m \text{ true } n) = t_4$$

$$t_4 = t_3 = t_2 = \text{int}$$

$$t_y * \text{int} \rightarrow \text{int} = \text{int} * \text{int} \rightarrow \text{int}$$

$$t_y * \text{int} \rightarrow \text{int} = \text{int} * \text{int} \rightarrow \text{int}$$

$$t_2 = \text{int}$$

$$t_g = (\text{bool} * \text{int} \rightarrow \text{int}) * \text{int} \rightarrow \text{int}$$