1   Practice

Provide the full lambda computation of the following sentences.

Solution to step-by-step computation

1. ⟦Every judge criticized Melrose⟧

    (a) ⟦criticized Melrose⟧

        $= $ ⟦criticize Melrose⟧
        $= $ ⟦criticize⟧(⟦Melrose⟧)
        $= $ ⟦criticize⟧(m)
        $= \lambda x[\lambda y[CRITICIZE(y, x)]](m)$
        $= \lambda y[CRITICIZE(y, m)]$

    (b) ⟦Every judge⟧

        $= $ ⟦every⟧(⟦judge⟧)
        $= \lambda f_{\langle e,t\rangle}[\lambda g_{\langle e,t\rangle}[\forall x[f(x) \rightarrow g(x)]]]($⟦judge⟧$)$
        $= \lambda g_{\langle e,t\rangle}[\forall x[$⟦judge⟧$(x) \rightarrow g(x)]]$
        $= \lambda g_{\langle e,t\rangle}[\forall x[\lambda y[JUDGE(y)](x) \rightarrow g(x)]]$
        $= \lambda g_{\langle e,t\rangle}[\forall x[JUDGE(x) \rightarrow g(x)]]$

    (c) ⟦Every judge criticized Melrose⟧

        $= $ ⟦every judge criticize Melrose⟧
        $= $ ⟦every judge⟧(⟦criticize Melrose⟧)
        $= \lambda g_{\langle e,t\rangle}[\forall x[JUDGE(x) \rightarrow g(x)]]($⟦criticize Melrose⟧$)$
        $= \forall x[JUDGE(x) \rightarrow $⟦criticize Melrose⟧$(x)]$
        $= \forall x[JUDGE(x) \rightarrow \lambda y[CRITICIZE(y, m)](x)]$
        $= $ T iff $\forall x[JUDGE(x) \rightarrow CRITICIZE(x, m)]$

2. Some girl stole the granola-bar

   (a) ⟦the granola-bar⟧

$$= ⟦\text{the}⟧(⟦\text{granola-bar}⟧)$$

$$= \lambda f_{\langle e,t\rangle}[\iota y[f(y)]](⟦\text{granola-bar}⟧)$$

$$= \iota y[⟦\text{granola-bar}⟧(y)]$$

$$= \iota y[\lambda x[GRANOLABAR(x)](y)]$$

$$= \iota y[GRANOLABAR(y)]$$

$$= g$$

   (b) ⟦stole the granola-bar⟧

$$= ⟦\text{steal the granola-bar}⟧$$

$$= ⟦\text{steal}⟧(⟦\text{the granola-bar}⟧)$$

$$= ⟦\text{steal}⟧(g)$$

$$= \lambda x[\lambda y[STEAL(y,x)]](g)$$

$$= \lambda y[STEAL(y,g)]$$

   (c) ⟦Some girl⟧

$$= ⟦\text{some}⟧(⟦\text{girl}⟧)$$

$$= \lambda f_{\langle e,t\rangle}[\lambda g_{\langle e,t\rangle}[\exists x[f(x) \ \& \ g(x)]]](⟦\text{girl}⟧)$$

$$= \lambda g_{\langle e,t\rangle}[\exists x[⟦\text{girl}⟧(x) \ \& \ g(x)]]$$

$$= \lambda g_{\langle e,t\rangle}[\exists x[\lambda y[GIRL(y)](x) \ \& \ g(x)]]$$

$$= \lambda g_{\langle e,t\rangle}[\exists x[GIRL(x) \ \& \ g(x)]]$$

   (d) ⟦Some girl stole the granola-bar⟧

$$= ⟦\text{some girl steal the granola-bar}⟧$$

$$= ⟦\text{some girl}⟧(⟦\text{steal the granola-bar}⟧)$$

$$= \lambda g_{\langle e,t\rangle}[\exists x[GIRL(x) \ \& \ g(x)]](⟦\text{steal the granola-bar}⟧)$$

$$= \exists x[GIRL(x) \ \& \ ⟦\text{steal the granola-bar}⟧(x)]$$

$$= \exists x[GIRL(x) \ \& \ \lambda y[STEAL(y,g)](x)]$$

$$= \text{T iff } \exists x[GIRL(x) \ \& \ STEAL(x,g)]$$