Example uses of ttr.sty for Record Types, Records, Functions, Operations and Relations

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- Simple record types:

  $R_1 : \begin{bmatrix} l_1 & : & T_1 \\ l_2 & : & T_2 \\ l_3 & : & T_3(l_1) \end{bmatrix}$

  $R_2 : \begin{bmatrix} l_1 & : & T_1 \\ l_2 & : & T_{2'} \end{bmatrix}$

  $R_3 : []$

- Simple records:

  $S_1 = \begin{bmatrix} l_1 & = & a \\ l_2 & = & b \\ l_3 & = & c \end{bmatrix}$

  $S_2 = \begin{bmatrix} l_1 & = & a \\ l_2 & = & b' \end{bmatrix}$

  $S_3 = []$

- Complex record types (with manifest fields, embedded RTs and paths):

$$\left[\begin{array}{lcl} & : & \left[\begin{array}{lcl} x & : & e \\ p_{=doctor(x)} & : & t \\ p1_{=Chorlton(x)} & : & t \end{array}\right] \\ r & : & \\ x_{=witness(r.x)} & : & e \\ x1_{=spkr} & : & e \\ ev_{=examine} & : & es \\ p_{=subj(ev,x)} & : & t \\ p1_{=obj(ev,x1)} & : & t \end{array}\right]$$

- Complex records:
$$\left[\begin{array}{lcl} & = & \left[\begin{array}{lcl} x & = & e \\ p_{=doctor(x)} & = & t \\ p1_{=Chorlton(x)} & = & t \end{array}\right] \\ r & = & \\ x_{=witness(r.x)} & = & e \\ x1_{=spkr} & = & e \\ ev_{=examine} & = & es \\ p_{=subj(ev,x)} & = & t \\ p1_{=obj(ev,x1)} & = & t \end{array}\right]$$

- RT functions:
$\lambda r : \left[\begin{array}{lcl} l_1 & : & a \\ l_2 & : & b \end{array}\right] . \left[\begin{array}{lcl} l_3 & : & a \end{array}\right]$

- Merge, min common super type and asymmetric merge functions:
$x \mathbin{\dot{\wedge}} (y \mathbin{\dot{\vee}} z) = (x \mathbin{\dot{\wedge}} y) \mathbin{\dot{\vee}} (x \mathbin{\dot{\wedge}} z)$
$x \boxed{\dot{\wedge}} y$

- Subtype and supertype relations:
$x \sqsubseteq y$
$x \sqsupseteq y$

- Small inline versions:
You can put small record types inline as $[l_1 : a]$, records as $[l_1 = a]$ and functions as $\lambda r : [l_1 : a].[l_2 : a]$.